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POLLUTION OF NAVIGABLE WATERS

HEARINGS

ON THE SUBJECT
OF

THE POLLUTION OF NAVIGABLE WATERS

HELD BEFORE THE

COMMITTEE ON RIVERS AND HARBORS

HOUSE OF REPRESENTATIVES

SIXTY-SEVENTH CONGRESS

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OCTOBER 25, 1921

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POLLUTION OF NAVIGABLE WATERS.

COMMITTEE ON RIVERS AND HARBORS,
HOUSE OF REPRESENTATIVES,
Washington, Tuesday, October 25, 1921.

The committee this day met, Hon. Henry Z. Ozborne presiding.

Mr. OSBORNE. Gentlemen, this is a hearing before the Rivers and Harbors Committee on the subject of oil pollution of the navigable waters of the United States, and in the absence of Mr. Dempsey, chairman of the committee, I am occupying the chair to-day. The bill that will be taken up first is that of Mr. Appleby, of New Jersey, and I would inquire how many of the people here at the hearing are from out of town. I think it will be advisable to hear those who are from out of town first. I suggest that there be as little duplication in the testimony as convenient. We have a great many witnesses and do not want to go over the same ground more than is necessary. How much time would you like to have, Mr. Appleby?

Mr. APPLEBY. Whatever time you may allow us—an hour or an hour and a half.

Mr. OSBORNE. Could you cover it in an hour, supplementing whatever might be offered by briefs?

Mr. APPLEBY. Yes.

Mr. OSBORNE. Go ahead for an hour.

STATEMENT OF HON. T. FRANK APPLEBY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY.

Mr. APPLEBY. Mr. Chairman and gentlemen, I am suffering from a severe cold. If the clerk or some one will read my bill, H. R. 7369, I will be very much obliged.

The ACTING CHAIRMAN. Yes.

(The bill referred to is as follows:)

A BILL Making illegal the pollution of the navigable waters of the United States by oil and other refuse matter, and providing a penalty therefor.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment or mill of any kind any oil, fuel oil, oil sludge, or any other oil refuse, or any refuse matter of any kind or description whatever, other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable waters of the United States or into any tributary of any navigable water from which the same shall float or be washed into such navigable waters.

SEC. 2. That every person and every corporation, shipowner, and shipowning company that shall violate or that shall knowingly aid, abet, authorize, or instigate a violation of the provisions of this act shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine of not exceeding $1,500 nor less than $500, or by imprisonment for not less than 30 days nor more than one year, or by both such fine and imprisonment, in the discretion of the court, one-half of said fine to be paid to the person or persons giving information which shall lead to conviction.

Mr. APPLEBY. Mr. Chairman, I do not propose to go very much into detail as to the bill. However, there are three features of it I will discuss, the first being a nuisance which affects every bathing beach on the Atlantic and the Pacific coast, as well as the coast of the Gulf of Mexico. One phase of said complaint has been traced to oil-burning steamers depositing their sludge into the navigable waters within the 3-mile limit of the United States. My idea is to abate that practice by Federal statute. The contention, which will be borne out by later testimony from ships entering into the harbors, is that this sludge which is being washed out not only kills the fish in the bays and harbors but ruins the bathing. It has been demonstrated that the oil coming from these ships can be shifted to lighters and the lighters convey it to refining plants

and the by-products used. In other words, the asphalt which now appears at the bottom of the ocean and during storms on the ocean washes up on the beach can be made use of on our highways. The bathing industry along the Atlantic as well as the Pacific Ocean has been seriously menaced for the last two or three years. This sludge, coming from these oil-burning boats, instead of floating on the surface, sinks to the bottom, and when storms arise it is washed up on the beach, and there remains, a menace to bathing. The result is that thousands of dollars' worth of bathing franchises in value has been cut in two. I recall reading an article in a Washington newspaper stating that down at Newport News after a man took a bath he had to get a cleansing with gasoline in order to get the tar from the body.

The second phase of the matter comes from testimony which was produced at the Department of Commerce at the hearing in March, showing that the streams composing the navigable waters of the United States, from Maine to Florida, had been depleted of fish, and that thousands of fish and wild fowl had been cast up on shore, not being able to live in the oiled water. We have testimony as to ocean fishermen that formerly they made thousands of dollars a year in ocean fishing, but since the appearance of floating oil they have had their income cut to a tenth of what they formerly received.

The third feature of this hazard should be viewed from a fire standpoint. A great many conflagrations have been brought about by fire on the water. I understand that the Baltimore conflagration started from burning oil on the waters. New York Harbor and other ports of entry have been affected by this menance.

Plants located along the navigable waters will very likely oppose a bill of this sort. These plants are polluting the streams and could easily install septic basins. The question will eventually get down to this—whether plants in the United States located upon navigable waters are going to be allowed to pollute the streams, so that the fishing industry, which is an important food industry, will be put out of business. Without going further into the detail of this important subject I will close my statement. We have about a dozen speakers here who will present their views in the short time allowed them.

Mr. LAYTON. As far as I have heard your statement, I think it is perfectly correct, and that it does a great amount of damage in the direction which you state. On the other hand, however, is there no practical way of preventing this pollution of the streams without putting a wet blanket on manufacture?

Mr. APPLEBY. My idea would be, offhand, that the United States could build tanks on shore and not allow the deposit of refuse that will be detrimental to fish, but that it should be kept in vaults on the shore, and the by-products disposed of as stated before.

Mr. LAYTON. In other words, without detriment to industrialism of the country, you think that could be done very readily? It is only a matter of negligence?

Mr. APPLEBY. That is right. The first speaker is Mr. David Neuberger, of New York City, representing the interstate committee for the prevention of pollution of coast waters and beaches.

Mr. OSBORNE. If you have so many witnesses, perhaps it would be advisable to limit the time to about five minutes.

Mr. APPLEBY. We have 10 here.

STATEMENT OF MR. DAVID NEUBERGER, 154 NASSAU STREET, NEW YORK CITY, REPRESENTING INTERSTATE COMMITTEE ON PREVENTION OF POLLUTION OF COAST WATERS AND BEACHES.

Mr. NEUBERGER. I represent the interstate committee for the prevention of pollution of coast waters. Anticipatory of what I am about to say, I would like to ask you gentlemen if you have received a copy of the petition of the interstate committee on the prevention of pollution of coast waters and beaches.

The petition reads as follows:

INTERSTATE COMMITTEE ON PREVENTION OF POLLUTION OF COAST WATERS AND BEACHES.

To the Members from the States of New York and New Jersey in the United States Senate and House of Representatives, and to all Federal officials charged with the enforcement of Federal laws affecting the conditions of the coast and adjacent waters of the respective States of New York and New Jersey:

The undersigned, constituting the officers, honorary vice presidents, and members of the "interstate committee of one hundred on pollution of coast waters and beaches," representing various municipalities and coast resorts of New York and New Jersey

affected by tar and oil pollution of the beaches and adjacent waters, represent as follows:

THE POLLUTION EVIL.

For several years last past the waters within a wide radius of New York Harbor, including the harbor waters, have been contaminated by ever increasing quantities of tar and oil waste. The effect of this evil is permanently to befoul beaches, periodically destroy bathing, seriously impair boating and fishing, and cause financial loss to coast resorts which depend for their propserity upon the entertainment of summer guests. The pollution extends for many miles out to sea. Its area of shore devastation extends along the south coast of Long Island and along the greater part of the New Jersey coast. It is carried ashore by varying conditions of wind and tide. It becomes mixed with the sand of the beaches and is impossible to fully eradicate.

THE CAUSE.

The cause of the pollution has been traced to several major sources, notably the custom of returning tankers and oil burning craft, in ejecting oil waste, oil slops, tar residue and water ballast, either in or before making port. The enormous increase of this class of ocean traffic with the port of New York, during the last three years, in a large measure accounts for the growth of the evil.

Another cause is the discharge of similar offal from asphalt plants, oil refineries, oil storage and shipping plants, gas works and kindred industries located in New York and New Jersey, either on the shores of New York Harbor or the various tributaries thereof.

Inspections of the waters of New York Harbor and its tributaries, including the Raritan, the Arthur Kill, Newark Bay, and for many miles up the Hudson, have disclosed lines of tar and oil slick drifting seaward. Great quantities of the same waste have been observed as far as 25 miles out at sea.

Special and supplemental reports by the New York State Department of Health, pursuant to an investigation ordered by Hon. Alfred E. Smith, governor, at the instance of the Waterway League of America, were rendered and filed in September, 1919. They confirm responsibility as herein stated, directed attention to existing Federal statutes, and find that although the United States supervisor of New York Harbor is vested with power to enforce the law he has insufficient means for patroling the harbor and its tributaries.

AMENDMENT OF EXISTING FEDERAL STATUTES IS NECESSARY.

The present statutes are found in sections 9933 to 9935, inclusive, of the United States Compiled Statutes. They forbid the matters complained of, but are limited to New York Harbor. Inasmuch as the major part of tar and oil pollution come from without the limits of the harbor, the existing law is inadequate, even if enforced.

The law should be amended so as to deny clearance to all tankers and oil-burning craft, unless as a condition precedent they prove to the satisfaction of the shipping authorities that the entire process of cleaning out oil, oil residuum, oil slop, and water ballast, has been conducted while in port, and in such manner in port that no tar or waste shall have entered the waters of the harbor or any of its tributaries.

AN ADEQUATE AND RIGID PATROL NECESSARY TO ENFORCE THE LAW.

The evil is so widespread that adequate funds should be provided to maintain an extensive patrol of the harbor and its tributaries; also of the tar and oil waste area of the open sea. Each line of pollution should be traced to its source, and the legal remedies rigidly applied. Careless spilling of oil in transfers from pipe lines to crude oil tanks, and discharge from asphalt plants, refineries, oil-burning industries, gas plants, and other sources of contamination, should be stopped. The development of industry is entirely consistent with rules of cleanliness, and the having of due regard for the rights and interests of others.

THE SITUATION IS URGENT.

The evil complained of has assumed such large proportions as to make early relief imperative. We urge the immediate enactment of legislation and adequate appropriation as above recommended, together with such other relief measures as the exigencies of the situation shall from time to time warrant.

Respectfully submitted.

Chairman, Hon. Royal S. Copeland, health commissioner, New York City; vice chairman, Horace M. Kilborn, president Borough Improvement Association of Deal, N. J.; treasurer, Henry J. Greenbank, Pro-

duce Exchange, New York; secretary, David M. Neuberger, 154 Nassau Street, New York; assistant secretary, Orson Kilborn, 300 West End Avenue, New York; chairman executive committee, Franklin Taylor.

Honorary vice chairmen: Hon. Nathan L. Miller, governor of the State of New York; Hon. Edward I. Edwards, governor of the State of New Jersey; Hon. James M. Wadsworth, jr., United States Senator, New York; Hon. William M. Calder, United States Senator, New York; Hon. J. S. Frelinghuysen, United States Senator, New Jersey; Hon. Walter W. Edge, United States Senator, New Jersey; Hon. Alfred E. Smith, ex-governor of the State of New York; Hon. E. C. Stokes, ex-governor of the State of New Jersey; Hon. Robert N. McCarter, ex-attorney general, New Jersey; Hon. J. E. Foster, vice chancellor, New Jersey; Hon. J. T. Backes, vice chancellor, New Jersey; Hon. Rulif V. Lawrence, judge Court of Common Pleas, New Jersey; Hon. James M. Beck, United States Solicitor General; Hon. Elmer H. Geran, United States district attorney, New Jersey; Hon. Charles F. Sexton, prosecutor of the pleas, Monmouth County, N. J.; Hon. Nathan Bijur, justice supreme court, New York; Hon. Lindley M. Garrison, ex-Secretary of War; Hon. Thomas L. Raymond, commissioner, Newark, N. J.; Hon. Arthur G. Salmon, justice court of special sessions, New York; Hon. Frank Hague, mayor of Jersey City, N. J.; Hon. J[illegible] justice municipal court, New York; Hon. Charles Gillen, commissioner, Newark, N. J.; Hon. Clarence E. Hettrick, mayor, Asbury Park, N. J.; Hon. Thomas G. Haight, ex-judge United States court, New Jersey,; Hon. P. Hall Packer, mayor, Seabright, N. J.; Hon. Victor O. Mravlag, mayor, Elizabeth, N. J.; Hon. Clarence J. Houseman, mayor, Long Branch, N. J.; Hon. John H. McGuire, mayor, Passaic, N. J.; Hon. Thos. M. McCarter, president public service, New Jersey; Hon. J. Spencer Smith, chairman New Jersey Board of Commerce and Navigation; Hon. Newton H. Porter, president New Jersey State Chamber of Commerce; Hon. T. Frank Appleby, Member of Congress, New Jersey; Hon. W. A. Stevens, State senator, New Jersey; Hon. Thos. J. Scully, ex-Member of Congress, New Jersey; Hon. Harry E. Lewis, district attorney, Kings County, New York; Hon. Luke D. Stapleton, ex-justice appellate division, supreme court, New York; Hon. Edward Riegelman, borough president, Brooklyn; Hon. John Harman, park commissioner, Borough of Brooklyn; Hon. Calvin D. Van Name, borough president, Richmond County, Staten Island, N. Y.; Hon. Maurice M. Connolly, president Borough of Queens, Jamaica, Long Island.; Hon. O. H. Brown, mayor, Spring Lake, N. J.; Hon. Dana Wallace, district attorney, Queens County, N. Y.; John B. Burnham, president American Game Protective Association; James Harvey Williams, president chamber of commerce, Brooklyn, N. Y.; W. P. Ahnelt, owner Pictorial Review; J. Lyle Kinmonth, chief rotarian, Rotary Clubs, New Jersey; W. C. Durant, Henry Seligman, Hamilton Fish Kean, T. W. Warner, Lewis W. Minford, Joseph H. Tooker, Henry J. Caeser, E. D. Adams, Charles A. Boston, Ira Barrows, Ira Carhart, Simon Guggenheim, John W. Herbert, E. F. Albee, Jefferson Seligman, Inglis M. Uppercu, John W. Griggs.

Committee of one hundred composed of public officials and leading citizens of the affected areas: H. E. Ackerson, James C. Auchincloss, Edward D. Adams, Theodore F. Appleby, Aaron Armstrong, A. F. Applegate, Dr. Jos. Ackerman, Dr. James F. Ackerman, A. F. C. Alfaro, E. W. Bailey, W. Warren Barbour, Bertram H. Borden, Theo. H. Banks, Fritz Achelis, Francis J. Arend, Joseph M. Byrne, Frank C. Borden, jr., Robert H. Boone, Henry A. Bennett, Theodore H. Banks, O. C. Bogardus, Dr. W. W. Beveridge, Julian Bach, Dr. H. S Bennett, Aaron J. Bach, Mr. Edward Croker, A. S. Clarke, John M. Corlies, Lester B. Churchill, O. S. Camp, John J. Cone, Horatio Clayton, Ira Carhart, Thomas J. Cox, William Carille, H. L. Crawford, Morley K. Dunn, Henry R. Dwight, Joseph P. Day, Rev. W. Dutton Dale, Richard A. Donnelly, Clarence A. Edwards, Charles Emerick, William R. Fowler, Charles Fritz, Harold M. Frazee, H. P. Goldschmidt, Samuel W. Gumpertz, Walter Gravatt, Arthur F. Golden, Louis

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You will note in the examination and perusal of this petition the names of the men and the character of the men who consititute this committee, and preparatory to what I am about to present to you, I would like to inform you of that because it is a matter of interest to me.

By the way, I am like the fellow, a celebrated tenor, who attempted to appear in England, and another gentleman said he had left both his voice and hair behind him, when he did not appear. I am appearing in a case where I have left only half of it behind me.

New conditions of necessity bring new theories. The Congress of the United States, the officials generally, and the public generally can be said to be going forward, not backward. We can not take that position. Oil-burning vessels up to a certain number of years ago were not very frequently seen. New conditions have brought about new inventions in mechanics and we find a condition we must meet. The little borough of Deal situated on the north shore of New Jersey a few years ago had an assessed valuation of $60,000. They now have an assessed valuation of $8,000,000, and have the residential homes of some of the most prominent of our citizens in the East, and also in the West, a very high-class residential community. Last year they found that conditions were becoming such that they were absolutely intolerable, a menace to health, a sanitary menace, absolutely destructive of sanitary conditions, and a meeting was called. At that meeting I had the honor and privilege of presiding as chairman and had a part in the program of what occurred at that meeting, which was followed by the organization of this present committee. If you will permit me to leave this with you, Mr. Chairman, I will be very much obliged to you.

The situation presented by these conditions has become nigh intolerable, being first of all a menace to health. They are a menace to health, because this pollution affects the throat, and on the Jersey shore we have had the specialists quite busy during the past year.

Mr. LAYTON. Have you any evidence to that effect from the medical profession?

Mr. NEUBERGER. We will submit that to you at a future time. Consequently, millions of dollars have been expended by the governments of the States of New Jersey and New York on their respective coasts to place their beaches in sanitary condition for bathing purposes, so that both poor and rich could enjoy the benefit of salt-water bathing. As you all know, they are healthful and conductive to health.

Mr. LAYTON. It is fine.

Mr. NEUBERGER. The result is that at Seabright, and if there is anybody here from Seabright Beach, or Rumson, they will confirm my statement that sea bathing has become impossible. Men have journeyed with their families from California to the

Jersey shore; they have journeyed to the Long Island shore, and thousands and millions of dollars have been invested to put up bathing beaches where it is impossible to bathe. The cause for this will be told you by some of the gentlemen who will present their arguments to you. If it is conducive to public health to let conditions remain as they are, the bill should be defeated. But if it is a measure contrary to trade wastes in manufacturing establishments, it should not be held up. It is a great evil, a terrific menace, an inexplicable menace, which will eventually affect health and probably bring about conditions which are insanitary. Such a measure will avoid trade wastes in manufacturing establishments, which can be compelled and directed to install methods by which the elimination and the exuding of these foreign poisonous substances shall be prevented, and nothing should be permitted to stand in the way. Take the great metropolitan city of New York. Some years ago the heatlh depart ment issued its edict that no soft coal should be burned in its factories, in the greater city, because of the fact that it was deleterious to health. Prosecutions were inaugurated, fines imposed, and it was stated that they could not go on. It was then proposed that they install machinery such as smoke consumers, at large expense, which they finally did in that case, and the menace has been eliminated.

We say to you that there is no reason why the industries of the United States, which are as great as the manufacturing industries commercially, should be absolutely protected, because food should be and must be conserved.

The shellfish industries in this country, without exaggeration, run into the hundreds of millions of dollars. From the highest point on the Maine coast to the lowest in California, and from Puget Sound to Florida, these industries, if they were to be measured by that consideration, would be most invaluable. Without them the people of the United States would suffer a visitation that might lead to a food famine. The sea has produced for them when the land has failed and the sea has produced for them when there has been a dearth of food from all parts of the world, and yet to-day, unless you eliminate the discharge of oil sludge and oil waste from steamships coming into the harbors, you are in danger of entirely exterminating the fish. That is best evidenced by the pound fishermen, for during the last summer the commercial fishermen have suffered to the point to which some of them have been nigh extinguished. You will find the shores of New Jersey in that condition, and you will hear of that by reason of the fact that nothing has been done to cause us to bring about a cessation of this menace. It is a menace, as you will find, if you investigate it and send a ship down below Sandy Hook into the wide areas of the ocean. Within 25 miles of Sandy Hook you will find the finest coast, the most beautiful, most gorgeous sight which the eye can behold. It is a black Saragossa sea, where you will find depicted the most beautiful colors which no painter can put on canvas, when winds are favorable. You will find them coming to the shore, and because of those insanitary conditions to-day, I think, the evidence before your committee will be that instead of coming down to the Jersey coast, Sandy Hook, and Staten Island Bay, they find their way down to the Delaware capes.

If food be the question, the health of the nation is a question also to be determined, and if the food of the nation is to be considered, there can be no doubt that the sea produces 25 per cent of the food of our country.

What should be done to prevent it? I have in my possession, which I received this morning from the health officer of the great metropolitan city, a paper which I beg leave to file with you, or a copy of it, in which he states that the pollution from residual oils from oil-burning vessels exists throughout the harbor and up the Hudson River and throughout all the tidewaters almost of the lower part of the State of New York. He goes on and shows what the conditions are and what a great menace to health and food conservation this is. Four weeks ago last Wednesday, if a flare had been dropped in the Hudson River, the entire New York shore and the Jersey shore would have been burnt and nothing would have stopped it.

You ask why we are here? Why is importance attached to this situation? The importance is to you gentlemen and your families, as well as all the families in the United States. Pollution of fish brings about ptomaine poisoning and other diseases. Pollution of the beach and coast waters brings disease, and if it can not be prevented by Federal legislation we had better stop, it seems to us, and submit our matters to the police power of the various States which, if it exists at all, we do not see why it can not be brought to bear upon matters which are within the jurisdiction of the State.

I represent and I am appearing here for the interstate committee, of which I have handed you a petition, and I represent the borough of Deal, and Mr. Orson Kilborne represents the Borough Improvement Society of Deal. We say to you that while we are appearing here and speaking in favor of and urging the passage of this bill, we also desire impressed upon you that the bill is not half strong enough. Trade wastes can not be made superior to the public health; it should not be made superior to the

public weal and public good and the preservation and conservation of food. Manufacturers must conform to law and it can not be expected by the representatives of this great Government, for which you gentlemen stand and which you gentlemen represent, that because 1 or 2 or 5 or 10 or 1,000 factories have not seen fit to install modern equipment, that the public must be subjected to that danger rather than an expense incurred for installation of modern machinery.

I doubt, gentlemen, whether this hearing to-day can cover all the subjects and whether you can hear everything that is to be said in favor or opposition. I have in my possession a statement of the harbor supervisor's report of New York, who has made a study of the subject, showing that something must be done to eradicate the present existing evil and prevent the menace, which, if it is allowed to proceed, will mean disaster. May I be permitted to file these papers at some future date?

Mr. OSBORNE. Yes.

Mr. NEUBERGER. I thank you.

(Statements referred to are as follows:)

STATE OF NEW YORK, EXECUTIVE CHAMBER,
Albany, September 4, 1919.

FRANKLIN TAYLOR, Esq.,
Woolworth Building, New York City.

DEAR MR. TAYLOR: At the request of the governor, I am transmitting to you herewith a portion of the report made by the commissioner of public health in response to the order issued by the governor under date of the 12th of August, 1919.

The portion that I am submitting to you contains the conclusions of the commissioner of public health. The report itself is too voluminous to be copied, but you are at libery to examine the same at any time you so desire. You will notice from the conclusions that the commissioner finds that a nuisance does exist, but he is unable to state its source. He, however, is of the opinion that it probably comes from tankers that are carrying crude oil to factories that are using the same, or possibly from the waste from such factories, many of which are, of course, in New Jersey. He seems to find that none of the alleged sources covered by the order are responsible for the nuisance.

The commissioner of health in transmitting the report said that he would continue his investigations, if so desired, in an attempt to definitely ascertain, if possible, the source of the "oil sleek" which he says constitutes the nuisance. At the request of the governor, I have requested the commissioner of health to continue the investigation and report such information as he is able to obtain, and the same will be communicated to you.

Very truly, yours,

JAMES A. PARSONS,
Counsel to the Governor.

I beg to submit the following conclusions:

1. That of the 67 plants engaged in the manufacture or production of coal tar or aniline by-products or waste, including gas works, from only eight plants, namely, the plants of the Astoria Light, Heat & Power Co., the National Aniline & Chemical Co., the Glens Falls Gas & Electric Light Co., the Half Moon Heat, Light & Power Co., of Mechanicville, the Cohoes Power & Light Corporation, the Chuctanunda Gas Light Co. at Amsterdam, the Albany & Southern Railroad Co. at Rensselaer, and the Albany & Southern Railroad Co. at Hudson, were any appreciable quantities of oil and tar wastes or dye wastes discharged into the waters of New York Bay, Jamaica Bay, and their tributaries.

2. That of these plants so discharging said wastes into said waters, in only four cases, namely, the plants of the Astoria Light, Heat & Power Co., the National Aniline & Chemical Co., the Glens Falls Gas & Electric Light Co., and the Cohoes Power & Light Corporation, were there wastes discharged in such quantities and under such conditions as to cause objectionable conditions; and in these latter cases the objectionable conditions noted were principally limited to the immediate vicinity of the plants.

3. That none of the plants referred to in your order and covered by the investigation was to any appreciable extent responsible for the objectionable oil pollution of the waters of New York Bay and Jamaica Bay alleged by the complainant and corroborated by observation made during this investigation.

4. That a serious nuisance is created in and around the waters of New York Bay and Jamaica Bay from certain oil wastes discharged into these waters from sources

other than the plants referred to in your order, which seriously and injuriously affect bathing beaches and yachting and cause damage to property in and around these waters.

5. That although it is not possible at the present time, with the information now available, to assign conclusively the definite source or sources of the nuisance so created, what information was obtained would indicate that it is traceable largely, if not wholly, to the oil tankers which transport crude and refined oil to and from ports in the vicinity of New York Harbor, or from industrial plants handling these oils.

Respectfully submitted.

HERMANN H. BIGGS,
State Commissioner of Health.

STATE OF NEW YORK, EXECUTIVE CHAMBER,
Albany, October 1, 1919.

FRANKLIN TAYLOR, Esq.,
New York City.

DEAR MR. TAYLOR: Your communication of September 30 received. I am inclosing you herewith a further report made by Mr. Horton upon the question of pollution of New York Harbor.

Yours, truly,

JAMES A. PARSONS,
Counsel to the Governor.

STATE OF NEW YORK,
DEPARTMENT OF HEALTH,
Albany, September 26, 1919.

HERMAN M. BIGGS, M. D.,
State Commissioner of Health, Albany, N. Y.

DEAR SIR: I beg to submit the following report on our further investigation of the pollution of the waters of New York Harbor and Jamaica Bay and their tributaries by the discharge of oil wastes referred to in your report to Gov. Smith of August 30, 1919.

In your report to the governor you will recall that the sources of the oil wastes complained of were found to be due not to the manufacturing plants engaged in the manufacture or production of coal tar and aniline by-products or wastes as alleged and that although the exact sources of the oil wastes were not definitely found, information obtained from the investigation indicated that oil tankers and industrial plants handling crude and refined oil were largely if not wholly responsible. In order to throw more light on the subject and determine more definitely the sources of these oil wastes you directed me to make a further investigation with this end in view. The results and findings of our previous investigation are fully set forth in your report to the governor and will therefore not be reviewed in any detail at this time.

Our further investigation covered a period of nine days, from September 5 to 13, 1919, inclusive. The field work was carried on by one assistant engineer and one inspecting engineer and in large measure with the assistance and cooperation of the United States supervisor of the harbor of New York. Detailed inspections were made of five petroleum oil refineries, three petroleum oil storage and shipping plants and two asphalt plants, all of which are located in the State of New Jersey and include the refineries of the Standard Oil Co. at Claremont, Bayonne, and Bay Way; the refineries of the Tide Water Oil Co. and the Vacuum Oil Co. at Bayonne; the oil storage and shipping stations of the Texas Co. and the Gulf Refining Co. at Bayonne and the Mexican Petroleum Corporation near Carteret, and the asphalt plants of the Warner-Quinland Asphalt Co. near Carteret and the Barber Asphalt Co. near Perth Amboy.

The main offices of these companies and the office of the United States Shipping Board were also visited and information secured in reference to the operation of the factories and pipe lines and the number, movements and operations of oil tankers owned and operated by these concerns. Two days were spent in one of the patrol boats of the United States supervisor of the harbor of New York in company with one of his inspectors, inspecting the waters of New York Harbor, Kill Van Kull, and the Arthur Kill and examining the outlets from the plants engaged in the handling r refining of petrolum oil on the shores of these waters in the vicinity of New York ity. Conferences were also held with the United States supervisor of the harbor

of New York and data obtained as to the jurisdiction of his Department and the means at his disposal for detecting violations and enforcing the law with respect to the discharge or depositing of wastes in the waters of New York Harbor and its tributaries.

In connection with the inspection of the refineries, oil storage and shipping stations, and the asphalt plants referred to, a detailed examination of each plant was made with special reference to the disposal and treatment of its oil wastes. It was found that with one exception, namely, the plant of the Warner-Quinland Asphalt Co., all of these plants have so-called separators through which oily liquid wastes are passed and where the oil is separated from the water by flotation. The oil which comes to the surface of these separators is skimmed off and utilized. Although these separators seemed to be fairly efficient in removing most of the oil from the wastes, a small amount of oil does, however, escape through the outlets of these separators with the waste water. The oil that thus escapes collects on the surface of the water, in the slip and in the corners of the docks of the various plants, and under certain conditions of tide and wind is carried out into the harbor and its tributaries. This oil could be traced for limited distances below the various plants before it becomes dissipated.

In the case of the plant of the Warner-Quinland Asphalt Co., on the westerly shore of the Arthur Kill, near Carteret, no attempt appears to be made at the present time to recover the oil discharged with the wastes from the plant. Although a small separator divided into two compartments, 8 feet square and 4 feet deep each, formerly used for the treatment of a portion of the wastes, was found in the plant, this separator had been abandoned and was not in operation at the time of the inspection. The oil, water, and sediment which collects on the bottom of the blow-off tanks is discharged intermittently and directly onto the surface of the ground near these tanks and flow into ditches leading to the Arthur Kill. The condensed steam which results from the blowing of live steam through the oil in the process of manufacturing of asphalt and the water used for washing oil are discharged almost continuously into a meadow on the northerly side of the plant, from which it flows into a ditch leading to the Arthur Kill.

The oil and wastes discharged from this plant either directly or indirectly were obviously much greater than those discharged from any of the other plants inspected and could be traced to considerably greater distances. As the result of tidal and wind action the oil spread out upon the water in sheets or patches of considerable size and the shores on both sides of the Arthur Kill above and below the plant were polluted by black oil. In fact, this condition results not only in the creation of a local nuisance at this point, but also undoubtedly contributes to an appreciable extent to the pollution of New York Harbor and its tributaries and is a condition that should be corrected. It is unlikely, however, that it was in any great measure individually responsible for the gross and objectionable pollution of bathing beaches referred to by the complainants.

From conferences with the officials of the different oil companies whose plants are located on the shores of New York Harbor and its tributaries in Greater New York and New Jersey it was learned that these companies own and operate some 140 tankers, having capacities of from 20,000 to 100,000 barrels each, nearly all of which ply between the port of New York and foreign and other domestic ports. This does not include 41 oil tankers owned by the United States Shipping Board, which are used for the transportation of crude and fuel oil to and from New York Harbor and for the bunkering of United States naval vessels and merchant vessels, and merchant vessels of the United States Shipping Board. By December 1 of this year it is expected that the United States Shipping Board will have 70 oil tankers in operation. There are also some 45 or 50 smaller tankers or lighters, having capacities of from 2,000 to 15,000 barrels of oil each, used for the transportation of oil to and from various parts of New York Harbor by the various oil companies. It was also learned that the movement of oil to and from New York Harbor has increased from 300 to 400 per cent within the last five years. During July and August of this year about 60 tankers owned by private oil companies arrived in New York Harbor either with oil or ballast, and some 45 tankers departed from New York Harbor carrying oil or ballast, not including the arrival and departure of tankers owned by the United States Shipping Board.

From the data obtained regarding the operation of oil tankers it was found that these tankers contribute to the pollution of New York Harbor and its tributaries in a number of ways, such as by the pumping out of oil with ballast; the pumping out of so-called slops in the cleaning of the tankers prior to sending them to dry docks for repairs and when changing from one class of oil cargo to another; and from the spilling of oil in pumping out the cargoes at the docks or into lighters.

With respect to the pollution of New York Harbor by the pumping out of ballast it was found that many of the tankers which leave New York Harbor loaded with oil return with ballast consisting of sea water. This ballast contains considerable residual oil which was stated to be in some cases as much as 300 barrels per tanker, handling crude or fuel oil, which it has been impracticable to pump out in the unloading of the cargo of oil at the destination of the tanker. This is due to the arrangement of the pumping and piping equipment of most of the tankers. Although this oil in the tankers floats on the surface of the water when conditions are quiescent, it is obvious that when the ballast is pumped out and the water is agitated by the pumping, a large part of this oil escapes with the last water pumped out.

It was claimed that the captains and masters of the tankers have orders to pump out this ballast at sea before entering the harbor, but it appears that these instructions are not always carried out. Furthermore, it is found that in a few instances the construction of the tankers is such as not to permit of pumping out the ballast before reaching the docks and that during rough weather or in times of storm it would not be safe to pump out all of the ballast before entering the harbor. It was learned also that many if not most of the tankers pump out the last portion of the ballast into the lower bay between Sandy Hook and the quarantine station near Stapleton.

With respect to the pollution caused by the pumping out of so-called slops it was found that when a tanker is put into dry dock for repairs, which is done about once a year, or when changing from one class of oil to another, the various tanks or compartments are steamed out and washed down with hot water. The resulting mixture of oil and water is called "slops." It was claimed that, in the cases of companies that have refineries in the district, these slops are pumped from the tanker into slop tanks on shore, or into lighters in the harbor, which transport the slops to such slop tanks. The oil from these slop tanks is recovered and refined. A certain amount of oil from these operations, however, finds its way into the harbor. This is particularly so in the case of companies which operate tankers, but have no refineries in the district, such as the Mexican Petroleum Corporation, the Texas Co., and the Gulf Refining Co.

With respect to the pollution of the harbor from the spilling of oil in pumping out the cargoes of oil at the docks or into lighters in the harbor it was found that the oil from the tankers when they arrive is either pumped directly into storage tanks on shore or into lighters in the harbor, from which the oil is transferred to these storage tanks, or, in some cases, into other vessels. From these processes a considerable amount of oil is also lost overboard. In the case of one plant, holes were found in the dock under the pump connection which allowed oil to escape into the harbor when the pipes are disconnected.

An additional source of oil pollution was found from our investigation to be caused by the occasional discharge of oil from the accidental breaking of oil pipe lines. It was learned that one of the pipe lines crossing North River was broken some time ago by the anchor of a battleship, and that an oil pipe line in Newark Bay was broken by a tugboat which anchored over it. The discharge of oil into the harbor due to breaking of the pipe lines probably does not occur very often, but when it does occur large quantities of oil escape, due to the comparatively great length and large size of these pipes and the pressure under which they are operated. These breaks, however, can be readily detected and quickly stopped as soon as discovered, and the pipe lines are constantly patrolled by the oil companies, so that it is not likely that they are responsible for the gross and objectionable pollution complained of.

It was learned from conferences that the United States supervisor of the harbor of New York that under a law of Congress entitled "An act to prevent obstructive and injurious deposits within the harbor and the adjacent waters of New York City, by dumping or otherwise, and to punish and prevent such offenses," enacted June 29, 1888, and amendments thereto enacted August 17, 1894, and May 28, 1898, he has full authority to enforce the provisions of this act and prevent the placing, discharging, or depositing of any refuse except sewage and street wash into said waters. Although a number of vessels have been detected by him in the act of pumping oil or oily waters into New York Harbor within the past year, the force at the disposal of the supervisor, however, appears inadequate to effectively patrol the harbor. We were advised that only one small motor boat having a speed of about 6 miles per hour is available for the purpose of detecting cases of violation such as the discharge of oil into the harbor. It is obvious that more effective patrol is necessary and it would seem that, since only a few tankers arrive in the port of New York each day, it would be advisable to have sufficient patrol boats available to enable the supervisor of the harbor to have one of these boats meet every tanker as it enters the Lower Bay and accompany it to its dock, and thereby more effectively prevent the pollution of the New York Harbor and its tributaries by the discharge of oil from these tankers.

In view of the foregoing and as a result of our further investigation I beg to submit the following conclusions:

1. That there are five petroleum oil refineries, three petroleum oil storage and shipping plants, and two asphalt plants located in New Jersey on the shores of New York Harbor or its tributaries, not including the plants inspected at the time of the previous investigation from which some oil escapes into New York Harbor.

2. That although the oil which escapes from these plants undoubtedly contributes somewhat to the pollution of New York Harbor, it is unlikely that it is responsible for other than local nuisances in the vicinity of the plants or that it is responsible to any great extent for the gross and objectionable pollution of the harbor and beaches complained of.

3. That there are other sources of pollution such as from the breaking of pipe lines and the overflowing of oil storage tanks, which are accidental in their nature and which there is little evidence to indicate were responsible for the gross and objectionable pollution complained of.

4. That the discharge of the oil from the oil tankers transporting oil to and from New York Harbor and its tributaries is largely responsible for the gross and objectionable pollution of these waters complained of.

5. That the discharge of oil or oily wastes from tankers and other vessels and from industrial plants into New York Harbor and its tributaries is in direct violation of Federal laws relating to the pollution of said waters.

6. That the enforcement of these Federal laws is under the jurisdiction of the United States supervisor of the harbor of New York, who has authority to determine and proceed against any violations of these laws.

7. That in order to more adequately and effectively enable said supervisor to enforce these laws he should be provided with additional means for patroling the harbor and its tributaries.

Respectfully submitted.

THEODORE HORTON, *Chief Engineer.*

STATEMENT OF MR. WILLIAM A. STEVENS, OF MONMOUTH COUNTY, N. J.

Mr. STEVENS. It is a privilege at this time to speak to this committee on this great piece of legislation. For the past four or five years the situation along the shore—I am speaking from my own knowledge—has become worse and worse, until this last summer conditions were so apparent that citizens that lived on the shore became thoroughly aroused as to the importance of some measures being taken by the Government that would eliminate these conditions. The two great parties of our State in their last meetings of their parties have come out together indorsing some action to be taken by the Government that will in some way control this situation and prevent the conditions which are working great damage and injury to the industries along the shore, to the destruction of food, of fish, and shellfish, so valuable to the country at large. I may say that I have seen this summer the oil washing up on the shore gathered together in lumps. You can see it upon the boats as they are traveling over the waters, in the bays and harbors, especially in New Jersey. I have seen this condition. I have seen fish struggling at the surface of the water and finally dying on the water's surface. Our fishing industry in the State in the harbors has been seriously depleted. In this past four or five years there has been practically little or no fishing in the bays and harbors of our State, and much of this state of affairs is attributed to this condition. The State board of health only this last summer was obliged to condemn the waters of what is known as the Shrewsbury River, a tributary of New York Harbor that runs from Sandy Hook into the city limits of Long Branch and into the borough limits of Red Bank, two thriving municipalities, with a water front of 10 miles in length, that has been condemned because of the conditions that they have found in the examination of shellfish that are taken there in large quantities and found to be polluted and dangerous to health.

Mr. LAYTON. Do you mean condemned as a source of food?

Mr. STEVENS. Yes; because of the condition they find this stuff in—the taste of oil or tar and substances of that character, which is present in the foodstuff itself.

I speak for this bill, although, as Mr. Newberger has said, I do not think it has teeth enough. I think we ought to get at the source. I think there ought to be authority put in there through the Secretary of War or somebody to eliminate it at the source. I believe that if the ships could be prevented from leaving the harbors with this refuse matter in their hulls, in the body of the boat, that they could be stopped, when they get out beyond the 3-mile limit and not dump it in the ocean to be washed along the shore. I do not believe it would work a great hardship to the manufacturing or shipping interests. I believe that material could be utilized as by-products and made something of commercially.

Mr. LAYTON. Do I understand that is the practice now, that they accumulate this stuff in the harbor?

Mr. STEVENS. I can not say, but the general thought is that this stuff is not dumped in the harbors but is dumped beyond the 3-mile limit or along the shore. I believe that if they could be brought to see that situation, if there was power somewhere to compel that situation, that you would eliminate so much of the trouble which we are now sustaining. I say to you that the people are aroused thoroughly; there must be something done. The fishing industry on the coast is one of the largest industries that we have. As the speakers before me have said, the pound fishermen to-day find themselves in the situation where for months, for weeks, there are no fish following the shores, and why? Simply because they keep away from this oily condition, from this tar which is to the bottoms of the waters, and something must be done to prevent the condition.

Mr. OSBORNE. Your five minutes has expired.

Mr. STEVENS. I would like to say one more word to impress upon you this thought: If you examine those petitions which are here, you will observe that these men are the biggest men in our industries to-day, the biggest men in business in and along our coasts and in the large cities, represented in this matter, who have joined in this movement to find some way, without doing injury to business interests of our countrh in other lines of endeavor, to bring about some means to prevent this condition whicy is a peril to-day.

Mr. LARSON. In your judgment, will this bill meet the situation, or do you want something more drastic?

Mr. STEVENS. I believe this bill is a step in the right direction, but it will impose a penalty. I think that there should be lodged somewhere the power to put into effect some practical way of getting after these boats to see that the law is obeyed, that there is no such stuff carried out and dumped, or brought in and dumped within reasonable distance of our shores.

Mr. LAYTON. Within your judgment and within that of the section of the country in which you live, does the greatest menace come from the ships or from the manufacturing establishments?

Mr. STEVENS. I have not been able to say that it is the manufacturing interests that have dumped this oil that comes upon our beach. The information which has been generally discussed is that the oil is believed to come from the ship at sea and washed upon our shores in heavy storms when the water is stirred up.

Mr. LAYTON. As a matter of fact if a ship does dump a large part of this refuse out at sea, the inevitable tendency is to seek the shore, is it not?

Mr. STEVENS. It will with winds and tides northeasterly and east.

Mr. DUPRÉ. I hope somebody will direct his attention to the supposed inadequacy of the present law, wherein it fails to meet the situation. I live in New Orleans and they are constantly arresting shipowners there for dumping oil in the Mississippi River, at the anchorage and docks. I want to know wherein the present law does not meet the situation off the coast of New Jersey and other places. I think the committee will be interested in that phase of the case.

Mr. APPLEBY. No doubt this bill will be amended before the hearing is over.

Mr. DUPRÉ. We would like to know the necessity of the bill particularly.

Mr. APPLEBY. Mr. Stevens has pointed out that the 3-mile limit apparently is not far enough to sea.

Mr. LAYTON. We can not change the 3-mile limit.

Mr. APPLEBY. You can not change that limit now. You can compel the boats to unload into other boats and distribute it to refining plants.

Mr. LAYTON. You can compel any ship before it leaves a United States harbor to have clean reservoirs and practically nothing to dump, in my judgment.

Mr. APPLEBY. Yes. The next speaker is Mayor Houseman, of Long Branch.

STATEMENT OF MR. CLARENCE J. HOUSEMAN, MAYOR OF LONG BRANCH, N. J.

Mr. HOUSEMAN. Mr. Chairman and members of the committee, I come at the request of the citizens of my municipality. We have a population of 17,000, and in summer upward of 50,000, and when you take into consideration the people that motor to the shore for the pleasures of bathing you have in the neighborhood of 100,000 people in our municipality in summer. If you go ahead and cast aside this proposed law you put us in a position of financial ruin, and I do not think I have exaggerated in any way the amount of people for bathing that we get in summer.

STATEMENT OF DR. JAMES WILLIAM MARSHALL, VICE PRESIDENT OCEAN GROVE CAMP MEETING ASSOCIATION.

Mr. MARSHALL. The Ocean Grove Camp Meeting Association consists of 13 laymen and 13 ministers and is in charge of our greatest interests there along the shore. I do not feel that I need to impress upon this body of men the largeness of our interests, of how far they extend, or anything of that kind. They are country-wide; they are world-wide, international-wide, and we have a great deal of interest in this matter. Some time ago we had meetings along the shore, some of you gentlemen here will remember, against no more dumping of garbage from New York City. It became a very great menace to the health of the people along the shore, and somebody, I think it was a Long Branch man, got a bushel of that and sent it to the mayor of New York City. When he saw it and smelled it and lived with it a while he talked to the man having charge of that garbage menace and it was disposed of. I am quite sure that when this committee thoroughly understands the real condition that exists along the shore at present and throughout the country they will do exactly the same thing. I am sure they will do the best for the people generally and the thing that is right, and that is our confidence in this committee to-day.

Three reasons have been stated, and I will emphasize them as briefly as possible. We have been told here that this menace is a destruction of our food supply—that is, from the fish and shellfish and various foods that come out of the sea—it is a menace in the destruction of health-giving forces of the sea; it is a menace in that it is a danger to property. I will try to make these three points as clear as possible in a moment or two.

There is no doubt about it being a menace to the fish supply. We have testimony here given or that will be filed. We have some of the men who have been in the fish business for 20, 30, 40, or 50 years, and even more, and who have testified to that fact. There is not any doubt about that at all. But it is also reaching beyond that. I have here a letter from a gentleman in Philadelphia, who had to do with the food supply during the war, and this is what he writes:

"Years ago we had 600,000 barrels of salt mackerel on the United States coast alone. This year we have and will have less than 43,000 barrels, and that will be distributed proportionately throughout the United States. All told, in 1921, we shall have but 43,000 barrels of mackerel as against 600,000 barrels in 1884. For the last five years we have had a pack of 90,000 barrels and this year 43,000 barrels."

The fact of the matter is that we are suffering a need in regard to this matter, and that already, I think, Norway and European countries have been able to send us a very large supply of mackerel. They are not able to do it, and this further fact concerns us as much as any. I had some salt mackerel at my breakfast this morning, Tuesday, but if you buy salt mackerel a little later it will cost you quite a sum, and a few countries have had to take this matter up, and, as I understand it, in England they have passed a very stringent law, and a number of these captains of oil vessels and men connected with that work have been compelled to pay a fine or go to prison. They understand better the pollution of sea waters than we do and they have taken it up with very great vigor. This letter will be presented by Mr. Moore, of Philadelphia, to the committee with some other data.

The next matter is the matter of health. If you look at it, you will find that it has very many ramifications. I took the trouble when I came into the office this morning to see where the matter of infantile paralysis is the most permanent, and this is what I found, in the report of 1921, on infantile paralysis: In New York there were 26 cases; deaths, 9. That is right along the ocean waters. In Philadelphia there were 3 cases and 2 deaths; in Boston, 26 cases and 4 deaths. That is simply one of the diseases. Mr. Neuberger has mentioned another disease, and undoubtedly the pollution of sea water has to do with that condition.

Persons come down to the shore for two things—first, recreation and, second, invigoration; and when you cut off the bathing in the sea, you have destroyed the recuperative forces of our American people to a very large degree. You have made it impossible for them to get back to their work and render a full measure of health and strength to the food supply and to the commerce and manufacturing interests of the Nation. It is a very serious matter. We used to do this two summers ago and have had to do it this summer, namely, cut trenches along the shore so that these oil deposits might go into the trenches and be covered up every now and again. If we do not do that it is very expensive, and a very inconvenient matter to do, when you have people come there from Denver, Colo., and from California and all over the country and from other portions of the world. If we did not do that people had to use gasoline or kerosene to wash themselves off after taking an ocean bath. You gentlemen know very well that there can be no recuperation or invigoration in that

kind of thing, and what we ask is that the ocean waters, which are world-wide in their character, shall be kept pure for the people of the United States.

The fire hazard, as you know, has increased there. Wherever a fire begins along the shore and you have an easterly wind—I am speaking now of along the Jersey shore—it is almost impossible to control it. If you have a storm with an easterly or northeasterly wind blowing and have a fire, it will burn up docks and piers and buildings of various kinds and involve the loss of millions of dollars' worth of property. You had an illustration in Asbury Park a year or two ago, where a fire started along the shore and spread all through the center of the city, and, had it not been that a brick church was there and a little change in the wind, Asbury Park would have been wiped out. In fact, Mr. Appleby's own house would have been wiped out had it not been for that condition. There is the real fire danger. You know that the vessel, the *Granite States*, was at its dock in New York, a vessel owned by the Government, and was burned down to the water's edge, due to this very condition. There is a large effect that would do great harm to us as a people, and we are not here to plead for a little selfish matter; we are here to plead for the people of the United States of America and those who come to us all over the country, and I say to you that if an area anything like as large on land was affected and made sterile as the area along the coast is being made sterile and dangerous you would immediately see to it that this matter was corrected forthwith. So I ask you this morning a very reasonable thing, namely, see to it that the area and, a very large area it is along the coast of our country, and especially along the Atlantic coast—that that area be kept pure and safe for the people of the United States. We think that you will do your duty, and do it promptly and efficiently. I will be glad to answer any questions.

Mr. OSBORNE. Thank you very much. It is a very interesting talk.

Mr. APPLEBY. The next speaker is the Hon. Franklin Taylor, of Brooklyn, N. Y., representing the Waterway League of America.

STATEMENT OF HON. FRANKLIN TAYLOR, BROOKLYN, N. Y., REPRESENTING WATERWAY LEAGUE OF AMERICA.

Mr. TAYLOR. Mr. Chairman and members of the committee, for the last 12 years I have been chairman of the committee on purification of waters of the Waterway League of America, which was the first semiofficial association of wide scope to take up this question of pollution. That work devolved upon my committee, and so 3 years ago I went, during the month of August, to the capital at Albany and asked Gov. Smith if he would have a special investigation made on the subject by the New York State Board of Health. Upon being told of the subject matter he said, "I know all about that, because some time ago I went in bathing at Coney Island, and I know I could not remove my shirt without kerosene."

I will say for the information of the committee that they should understand what this oil is like. It is not like oil. It is not like tar. It is more like fresh chewing gum that has been chewed and sticks to everything. It is more like pitch. It is worse than axle grease. It is something that when buried in trenches, as Dr. Marshall has said, when children go and dig in the sand on the beach 50 years later they will get it on their white shoes and white dresses.

Mr. LAYTON. I got it on me this summer.

Mr. TAYLOR. To give an idea of the extent of the economic loss, we have got more than thirty kinds of fish within the limits of the city of Greater New York and in large quantities. In the harbor of Jamaica Bay alone, within the city limits of the city of New York, the annual output of oysters exceeded $1,000,000. That entire output has been destroyed and is now prohibited by the health board because the oysters are contaminated, due to the pollution of the waters. The extent to which the manufacturing plants pollute the water, according to the report. a supplementary special report of the State board of health three years ago, is not extensive, and for the information of the committee I want to tell what the real cause is. It is stated in this petition or memorial, and that petition or memorial, may it please the chairman and the committee, covers absolutely the subject, epitomizes the entire subject. I feel that Mr. Appleby's bill does not apply a sufficient remedy and that it will be necessary to supplement it by further legislation to arrive at a sensible solution. On page 2 an amendment of the existing Federal statutes is necessary. The present statutes are found in sections 9933 and 9935, inclusive, and I might also mention for the record sections 9918 to 9921, inclusive, of the Federal Compiled Statutes. That was omitted through error from this report. They affected the matters complained of, but are limited to New York Harbor. Unless the major part of the oil and the tar is burned without the limits of the harbor the existing law is inadequate even if enforced. This is where it comes from.

Now, speaking of the tanks, in the tankers there is an oil residium. a sticky, tarry substance, heavier than water. and in other cases floating in large areas of water. It kills the fish and there are thousands of dead fish where this is found, and there are dead fish lying dead on the water. on the coast. and on the beach or the surface of the water. This contamination usually also comes from the vessels coming into the port, not the vessel that is leaving the port, that has left the port. When the oil tanker comes over from the other side and discharges its oil and then it fills up with water ballast. there are, maybe, from 20 to even more than that barrels of residium left at the bottom of the hold of the tankers, and that heavy substance goes underneath the water and they use the ballast to raise and float the boats. As the tanker approaches the harbor of New York City, carrying the water ballast on the return trip, she starts to dump the bilge water and in doing that within or before the 3-mile limit it is dangerous to the vessel. A great Saragossa Sea of this material can be found as far as 25 miles out from New York City, and with favorable winds, or, rather, unfavorable winds and tide, that is carried ashore. There is nothing to disintegrate it or decompose it. Year after year it remains the same and simply accumulates in greater quantity. Whatever legislation should be submitted beyond the provisions of the Appleby bill there should be effective means to prevent violations outside of the 3-mile limit. and there, of course, we come upon a very nice legal question, which is taken up on page 2 of the report. The report states the best remedies.

Mr. LARSON. That information is very important.

Mr. TAYLOR. The law should be amended to deny clearance to tankers and oil-burning craft unless as a condition precedent they prove to the satisfaction of the shipping authorities, the supervisor of the port, and this would be by sworn testimony, according to the rules laid down by the supervisor of the port, that the entire process of cleaning out the oil residuum, and the water ballast to be dumped while in the port, has been done, and in such manner in port that no tar or oil waste shall enter the water of the harbor; in other words, by operating sludge tanks on shore or by scows.

The next thing is this, which is a portion out of the board of health reports, a special report, copies of which will be mimeographed and sent to the members of the committee. Attention is called there that there is only one patrol craft with a speed of 7 miles an hour. There must be speedy craft that will follow the oil-burning ships right up to their berths or anchorage grounds and watch them and see that there are no violations while in the 3-mile limit. In order to have that we must have a larger appropriation and a special appropriation for that, and we must have enlargement of the powers by statute for the harbor supervisor.

However, the Appleby bill is a step in the right direction. We have to get moving, to get somewhere, but this really is so indescribably bad, and an economic loss so tremendous that it has agitated a very large body of our citizens, and as the committee will know from the chairman of the interstate committee who has spoken. I represent also a member of the city health commission of the port of New York.

Mr. HAYES. To a very large extent, do the steamers burning oil in oil tankers offend in this way?

Mr. TAYLOR. Steamers burning oil that are not oil tankers would not offend as much as oil tankers because they do not carry water ballast. But they do; they have blow-off tanks and as they approach New York start to blow off this sludge in the bottom of the blow-off tanks. There is no excuse for it. But the reason why the tankers claim they have to wait until they have practically entered New York Harbor to pump out the bilge is that under certain conditions of the sea it would not be safe for them to punp out their water ballast too far from the harbor mouth.

Mr. NEWTON. Does not this same condition exist in other harbors of the country as in New York?

Mr. TAYLOR. My investigation has been confined to the Hudson River and the coasts of New Jersey and Long Island.

Mr. NEWTON. I noticed, a few moments ago, a board in Savannah, Ga., appointed a committee to investigate this condition, to see if it could be stopped in Savannah Harbor.

Mr. TAYLOR. I think if you enlarged the power of the harbor commissioner of New York and give an adequate appropriation to see that his edicts are enforced, it would be, at least, a valuable experiment. We can follow it up by adopting it for all coast waters.

Mr. HAYES. You contend in your argument that the bone of this whole thing is in the tankers that come into the port of New York.

Mr. TAYLOR. The indication of the special report of the New York health board is that it mostly comes from the tankers.

Mr. HAYES. Is it not a fact that tankers coming into New York have an arrangement with their refineries that their bilge water is pumped into retainers, put through the separator and is properly taken care of by the refineries?

Mr. TAYLOR. If they have such remedies they violate it every day in the week.

Mr. HAYES. Do you know ot any instances of violation?

Mr. TAYLOR. They do it regularly.

Mr. HAYES. Is there any particular oil company that does it?

Mr. TAYLOR. Any particular oil company?

Mr. HAYES. Yes, sir.

Mr. TAYLOR. I can tell you that the report of the State board of health shows that they do it, and any fisherman can tell you that they do it regularly, pumping out the bilge water.

Mr. HAYES. The oil companies are not throwing oil out, but provide all sorts of means to take care of that, and one of the means provided in New York Harbor is by the method of a separator. They are not throwing into New York Harbor any oil that they can separate.

Mr. OSBORNE. I would suggest that you allow Mr. Taylor to make his own statement.

Mr. HAYES. I was just reaching up to a question.

Mr. TAYLOR. I will answer the question by saying that there are several other minor agencies to which this pollution is traced, and one of them is the oil storage tanks and oil refineries in the vicinity of New York, due to careless handling by the tanks from the pipe lines. There is a great deal of spillage around the marshes and the marsh is absolutely black every day and I have seen great areas around the refineries because they do waste it and also in the asphalt works.

Mr. LAYTON. In a case of that kind would not the result be that there would be no violation without doing good—it would kill the mosquitoes.

Mr. TAYLOR. It kills the mosquitoes on the Jersey meadows. They have great meadows absolutely black and have fouled them for all time.

Mr. MCDUFFIE. This report you mention is published?

Mr. TAYLOR. I will have it mimeographed and send copies to the committee. How many copies will be needed?

Mr. MCDUFFIE. Twenty-five copies. Let us print it in the hearings.

Mr. OSBORNE. Yes; put it in with your remarks.

(See p. 63 for the report referred to.)

STATEMENT OF MR. GEORGE M. MOTT, REPRESENTING SHELL FISHERIES OF NEW JERSEY.

Mr. MOTT. Mr. Chairman, I represent the shell fisheries. I have here a paper prepared and read by Thurlow C. Nelson, assistant professor of zoology, Rutgers College, biologist of the New Jersey Board of Shellfisheries, from which I will quote:

"If present conditions continue, the greater part of the eastern United States will be cradled in a septic tank, according to this author. The oyster, through its approaching extinction, is an index of this increasing contamination. Protection is needed for the populations of the seaboard, and the welfare of those who seek the beaches for health and recreation."

In Connecticut and Rhode Island and New York this trade waste of various kinds, oil and other trade wastes, have so thoroughly polluted the waters that those oyster planters, shellfish planters, and so forth, were put to their wits' ends to know how to carry on their business, and some of these planters do business in Jersey as well. They come to the board of shellfisheries and ask them to have legislation enacted in the State to allow them to try to reclaim the depleted, or destroyed, we might say, natural oyster grounds of the waters of north Jersey. We got that legislation through and leased those grounds to some of the larger planters. They did a great deal of work, cleaned up the grounds and spread hundreds of thousands of bushels of oysters over them and leased for three years, with the idea of trying to reclaim those grounds. Those leases have all been canceled because of the fact that there is no use to try to make them productive because of the trade wastes in the waters of Newark Bay, the Great Kill, Staten Island Bay, Raritan River, and the upper Raritan Bay.

Mr. LAYTON. I come from an oyster country myself, and live close to the mouth of the Delaware River, on the banks of which for 200 to 250 miles long there are all sorts of manufacturing establishments. You do not attribute the danger to the shellfish entirely to vessels dumping, do you?

Mr. MOTT. No, sir.

Mr. LAYTON. We find that there is not a manufacturing establishment—of course there may be an exception to the rule—that does not have a waste product containing some chemicals of some sort or other which are deadly to sea fish or to the shellfish.

Mr. MOTT. Yes, sir; you made a point a few moments ago about destroying the mosquitoes in north Jersey. We have a mosquito commission in New Jersey that has appealed to the merchants for the extermination of mosquitoes, and they point us to the fact that they have exterminated mosquitoes in north Jersey by this process on the beaches, when, as a matter of fact, it is only these poisons that are admitted into the water of the beaches, which kills all other matter, shellfish larvæ, finny fish larvæ as well. That is where the natural spawning grounds of the finny fish as well as the shellfish are. The shellfish can not run away from this menace; it has to stay there at its home and is destroyed. The shellfish in the neighborhood of north Jersey waters are being destroyed, while the mosquito extermination is in south Jersey, where we do not have so much pollution, on the beaches they are making them mosquito proof by exterminating them.

Mr. LAYTON. That is where we get them over on the Delaware side.

Mr. MICHAELSON. They do not fly that far.

Mr. MOTT. It is trade waste from the factory that is doing most damage to the shellfish. We come down into Delaware River and Bay and then we get oil, although the other trade wastes have affected all of our oyster grounds. We have lost about six miles of our natural oyster grounds in the trade wastes gradually working down the river. Some gentleman spoke of the tankers and oil-burning vessels discharging their water ballast and the bilge water and various other waters that contain the oil outside of the 3-mile limit, while, as a matter of fact, in the Delaware Bay where we have had over 30,000 acres of oyster grounds under leases, they are discharging the oil after they enter the Delaware capes. Our captains of our guard boats have reported to me that they have sailed and have taken over 15 inches of this oil and it is just smeared all over the boats, and it is a great menace because it kills the oyster larvae.

Mr. LAYTON. A fisherman can go out there but it will take him hours to row outside of the circle where this oil covers every foot of the water.

Mr. MOTT. As to the statements made by all of these gentlemen, I have witnessed the effect they have mentioned on the fish. Of course, we are interested more thoroughly in the oysters. That is my business. In north Jersey it not only kills the larvae but kills the adult fish as well. Our oystermen in dredging out oysters get thousands of dead fish which have been killed in the upper waters of the Raritan River and in Staten Island sound.

Mr. LAYTON. It got so bad with us that at one time the farmers went on the shore with teams and loaded up cart loads of it and carried it off as fertilizer.

STATEMENT OF MR. FRANK WINTERS, REPRESENTING DOCK COMMISSIONER MURRAY HULBERT OF NEW YORK CITY.

Mr. WINTERS. Dock Commissioner Hulbert intended to be here this morning, but found it impossible to do so. The things that I intended to speak about have been so well covered by the previous speakers that there is hardly anything I might say. The commissioner did suggest that it might be a good thing to collect the waste oil at its source. That could be easily accomplished by the construction of tank barges which could go alongside steamers and collect the waste from them. I think that will be a very practical suggestion and a very good suggestion, and in that connection, I think, in so far as New York Harbor is concerned, that it would be a very great advantage. I do not know that there is anything else I can say at this time.

Mr. OSBORNE. We have a letter from Mr. Hulbert, also a letter from the Maritime Exchange of the Port of New York, which will be printed in the record.

Mr. WINTERS. I think he intends to file a brief.

(The letters referred to are as follows:)

DEPARTMENT OF DOCKS,
New York, October 22, 1921.

Hon. S. WALLACE DEMPSEY,
Chairman Committee on Rivers and Harbors,
House of Representatives, Washington, D. C.

MY DEAR MR. CHAIRMAN: Congressman Appleby, of New Jersey, and Congressman Briggs, of Texas, have both written to me requesting my appearance at a hearing to be held by your committee on Tuesday, October 25, upon bills introduced by them, respectively, for the abatement of the oil-refuse nuisance and menace in the harbors and other navigable waters.

This is a subject upon which I have heretofore appeared before your committee in support of a measure introduced by our former colleague, Congressman Cleary, of New York, and since that time I have given the matter a great deal of serious thought.

Therefore, I regret exceedingly that other engagements will prevent me from attending the hearing Tuesday next, and beg to inquire if it will not be possible for me to present my views in person at a later date, convenient to yourselves.

Meanwhile, however, I venture to offer these suggestions:

The contributing cause to the oil-refuse nuisance can be divided into two classes:

1. The waste material discharged by oil-burning ships in the cleaning of their tanks upon their arrival in port.

2. Discharge of foreign waste material by industrial plants located on or near the water front.

Legislation of a prohibitive character does not, in my opinion, serve so effectively to abate a so-called "necessary evil" as the more sane and logical method of constructive regulation. In other words, it seems to me that the essence of the solution of this problem is not to tell the offenders what they can't do, but to provide a method by which they can do it lawfully.

I. The bunker tanks must be cleaned out upon the arrival of a ship and the waste material must be disposed of. It will not do to say what can't be done with it, but rather it is essential to say what can be done with it. In my judgment, specially equipped scows should be provided to receive the discharge of this waste material, accompanied by legislation directing its disposition in that manner and forbidding it in any other way, with a substantial penalty for violation thereof. I did feel sometime ago that with the transformation of coal-burning ships into oil-burning ships the city of New York should provide these scows, just as they now and heretofore have furnished scows for the reception of ashes from coal-burning ships which dock in New York. But when you realize that no matter how diligent the city of New York and the officers of vessels docking on the New York side of the harbor might be, the oil-refuse nuisance and menace might still continue if similar measures were not provided for on the Jersey side of the harbor, where the water front is under the jurisdiction of some 40-odd separate municipalities or communities, it will at once become apparent that the situation, so far as this port is concerned, can only be dealt with by the Federal Government, and therefore I have reached the conclusion, after mature deliberation, that the specially constructed scows should be built, operated, and maintained by the Engineering Corps of the Army or the supervisor of the harbor at New York.

II. It might also well be provided by legislation that all industrial plants located on or near the water front be required to discharge foreign refuse matter into traps and providing a substantial penalty if, in violation theerof, they continue to discharge it into navigable waters.

There is no doubt that the existing conditions constitute a nuisance as well as a menace to the interests of navigation and they have also affected bathing at the beaches.

The question is much more serious than many of us have supposed it to be and requires prompt consideration, constructive and stringently effective legislative action.

Yours, very truly,

MURRAY HULBERT,
Commissioner of Docks.

MARITIME EXCHANGE,
New York City, August 22, 1921.

Hon. S. WALLACE DEMPSEY, M. C.,
Chairman Committee on Rivers and Harbors,
House of Representatives, Washington, D. C.

DEAR SIR: At the regular monthly meeting of the board of directorz of the Maritime Association of the Port of New York held on August 10, 1921, the matter of pending legislation relating to the discharge of oil in navigable waters was considered, and it was the opinion of our board that the enactment of some measure tending to prevent the pollution of our water by oil was most necessary.

It was further the opinion that the various bills which have been introduced in connection with this matter, which seem to be formulated along similar lines, while they would no doubt be of assistance in checking the discharge of oil and its product into our navigable waters, could be made more effective in the following particulars:

1. All the pending measures seem to make an exception in the case of oil flowing from sewers and streets. This is no doubt owing to the fact that it would be a very difficult matter to control the discharge of oil into sewers, yet it would seem desirable to incorporate, in whichever of these measures is pressed for passage, a provision against the discharge of such matter into sewers and streets, if this is thought practicable. This may be a matter to be acted upon by the various municipalities rather

than by the Federal Government, but the suggestion is placed before you for such consideration as you may deem it warrants. No doubt the municipal authorities would take cognizance of any expression from you or your committee in this connection.

2. Your attention is respectfully invited further, to the matter of penalty provided for a violation of this act, which it is our belief should be more explicit. Referring particularly to section 2 of H. R. 7369, it states that "every person and every corporation, shipowner, and shipowning company" that shall violate the provisions thereof shall be guilty of a misdemeanor, etc. The suggestion is made that the following change might be desirable, serving to more definitely state the particular parties liable in case of a violation: "That every person and every corporation, shipowner and shipowning company, and any officer or employee of such corporation, shipowner, and shipowning company" that shall violate its provisions, shall be guilty of a misdemeanor, etc.

We will appreciate whatever action you may take to further the enactment of this legislation, and thanking you in anticipation, we have the honor to remain,

Very respectfully, yours,

CHAS. H. POTTER, *Vice President.*

STATEMENT OF MR. HARRY C. REHM, SECRETARY ASSOCIATION OF NORTH JERSEY SHORE MUNICIPALITIES.

Mr. REHM. Mr. Chairman and gentlemen, without reiterating or duplicating any of the previous arguments, I desire to say that I have been delegated by this association, which is made up of 23 municipalities bordering on the north Jersey shore, to appear here. You can take a map and around these 23 municipalities draw a circle going 100 miles away from the seashore, and inside of that circle you will find a population of 10,000,000 people. That is almost one-tenth of the entire population of the United States. It is one of the natural playgrounds of this large population, and, needless to reiterate, therefore, that all these general complaints that have been made should find some remedy. This association is not only composed of the mayors and civic officials of all these cities, but also of the chambers of commerce and the members thereof, as well as other civic bodies. The complaint is uniform and duplicated month to month at our meetings, not only from the industries along the entire shore front, but from the fishermen and the fishing industry of the shore front. This complaint is reiterated month after month: "Why don't you do something to help us?" You will find in the briefs we have submitted testimony repeating one after another something like this. A concern who had a refrigerating plant in one of these municipalities states that for the past two or three years the available fish that would come to them for boxing or barreling, packing ready for shipment to the interior of the country, is gradually getting lesser and lesser, with the result that last year he finally sold out and the plant will probably be used for an ice plant. The condition is general. I talked with a man in your city last night from Ohio. He said, "I notice in my State that it is more difficult to get lobster and crab meat and the various sea foods, probably as this very result." We are hoping that some of you men here in the interior who depend largely upon some of our sea foods and are fond of it will find ultimately before very long that same condition. It is getting scarcer.

I simply want to go on record as representing this organization and saying that we hope that you will give Congressman Appleby's bill every consideration.

Mr. BRIGGS. There are other bills before this committee dealing with the same subject, to correct the same evil complained of. As I have introduced one of such bills, I should like, possibly, 10 minutes to discuss it, and then there can be opportunity to discuss the various other measures now before the committee to show the various positions taken.

Mr. OSBORNE. I will state that there are a number of people here from out of town. My thought was to consult their convenience, and give them a chance to be heard, so that they can leave. There are several bills, and if we take the time for explaining each one of them, we might keep these gentlemen here longer than it is really necessary.

Mr. BRIGGS. It will not take me 10 minutes, Mr. Chairman.

Mr. BLAND of Virginia. Mr. Chairman, I have a bill I should like to say something about. If you are going into a consideration of these other bills at this time, we ought to be given an opportunity to be heard.

Mr. OSBORNE. Of course. The testimony we have had has related to the North Atlantic coast, and the situation is the same all along the coast.

Mr. LAYTON. I would like to see the record illuminated with facts, and if we get the facts we will have something we can act upon. I would like to hear this gentleman in regard to the one matter as to whether or not the people engaged in the transportation of oil are making this kind of investigation, and what steps they are taking on their own account to safeguard this proposition.

Mr. BRIGGS. It occurs to me, Mr. Chairman, without wanting to transgress the rules of the committee, that there is a phase of this question that has not been brought to your attention as yet, and which will be illuminating to you. I think, perhaps, it might be of interest to present that phase of the matter at this time in a succinct way.

Mr. LAYTON. This subject has been opened up, and I would like to get the statements of these gentlemen in regard to it.

Mr. MARSHALL. Mr. Chairman, may I make a short explanation at this point?

Mr. OSBORNE. Yes.

Mr. MARSHALL. I simply want to say, Mr. Chairman and gentlemen, that Hon. Edward C. Stokes, of New Jersey, is one of the members of our committee, and he wished me to say to this committee that he is very sorry not to be able to be here to-day. He has undergone a surgical operation, and his doctor has prohibited him from coming. I would simply like to have that explanation on the record so that ex-Gov. Stokes will have due recognition.

STATEMENT OF MR. VAN H. MANNING, REPRESENTING THE AMERICAN PETROLEUM INSTITUTE.

Mr. MANNING. Mr. Chairman and gentlemen, I do not want to be put in the category representing the oil industries of opposing the legislation suggested in the various bills now pending before the Congress on this subject. But I do want to enter a protest, on behalf of the oil industry, in the selection of the oil industry as the one factor which is causing the pollution of the various waters. It is a fact that the tankers which are controlled and operated by the oil companies take care of their own slop oil. These companies have their own refineries, and they bring the oil in tankers from Mexico and from the oil fields in the United States in these tankers, and the slop oil is taken to the refineries in the tankers and is taken care of. The refineries on the Atlantic coast and the Pacific coast, most of them, if not all of them, have separating tanks, by the use of which they conserve their waste material. So it is not the oil that is the factor in the pollution of the waters that have been referred to.

The oil industry does not oppose this sort of legislation, but we do want to call attention to the fact that there are many other contributing factors in this pollution, and you are trying to legislate for the whole United States.

Mr. LAYTON. I take it, if that is the case—and I accept your statement as being absolutely sincere—you have no reason for objecting to the legislation.

Mr. MANNING. We would not object to the legislation, but we are sensitive enough to feel that the committee ought not to pick out the oil industry as the one factor which is the cause of this pollution. I propose to show you that there are other factors which are more injurious to these streams than the oil industry. I want to cite a few of these things from a report of the Bureau of Fisheries issued in April, 1919. In that report these other factors are mentioned: Soda-ash manufacture, ammonia soda process, bleaching establishments, coal mines, iron mines, oil wells and refineries, tanneries, laundries, chloride of lime manufacture, gas works, sewage, leather manufacturers, copper electroplating works, and miscellaneous. Under the item of oil wells and refineries this statement is made: "When water was covered with a layer of petroleum and trout placed in the water at 8° C. no effect was produced in 4 hours, and with tench no effect was produced in 20 hours." Take, for example, the case of calcium chloride, used in soda-ash manufacture. A 5 per cent solution of calcium chloride at 160° C. killed salmon in 12 minutes, and at 13° C. killed other fish in 51 minutes.

Mr. CLOUSE. What report is that from?

Mr. MANNING. That is from a report of the Bureau of Fisheries of the Department of Commerce, dated April, 1919. Prohibitory legislation of this kind is not going to cure that evil. The supervisor of the harbor of New York has said that he had sufficient legislation, but unfortunately he did not have a sufficient number of inspectors to find these parties who were attempting to put the slop oil overboard from these vessels.

The main difficulty, so far as the oil pollution is concerned, can be taken care of without very much difficulty, just as in the larger municipalities they take care of ashes and garbage.

Mr. LAYTON. What I would like to see in the hearings is some definite facts concerning this point, whether it is oil pollution alone that is threatening to destroy the food supply that comes from our waters.

Mr. MANNING. I think if you will call upon the Department of Commerce they will give you the technical information regarding the pollution of waters. I am speaking of the whole country, an not of any particular locality.

There is another suggestion I would like to make to the committee, and that is that the Secretary of Commerce be authorized to make an investigation as to what is causing the pollution of the waters throughout the United States, and to what extent, because you must consider the industrial conditions existing throughout the country.

You can not simply close a plant here and there, but you must consider the industrial problem as a whole.

Mr. APPLEBY. The Secretary of Commerce will have a statement to present to the committee to-day, giving his opinion in reference to the subject.

Mr. MANNING. I simply make the suggestion, Mr. Chairman and gentlemen, that there is an agency which is qualified to make an investigation as to the pollution of the waters, and if legislation is considered necessary, the Secretary of Commerce should be given the power to enforce the proper regulations having to do with the inspection of those waters, and have the power to enforce those regulations.

There is another feature of the bills that I would like to see amended, and that is in reference to the minimum fine proposed. We have no objection to the provision in Mr. Appelby's bill reducing it from $2,500 to $1,500. It was $2,500 in the old act. But we would like to have that left to the discretion of the court, because as it is now, when the oil companies are prosecuted the court fines them $500, even in cases where there is a technical violation of the law.

Again I would say we are not opposing this sort of legislation. We want to help you to perfect it. But we do object to the oil industry being put in a class by itself, so far as being the cause of this pollution is concerned, because we do know that there are other contributing factors, and it is not a fact that the oil industry is the main contributing factor. They seem to have picked the oil industry as being the one factor.

STATEMENT OF MR. J. H. HAYS, 25 BROADWAY, NEW YORK, N. Y., REPRESENTING THE AMERICAN PETROLEUM INSTITUTE.

Mr. HAYS. Mr. Chairman and gentlemen, as Dr. Manning explained, it is not the intention or the purpose of the oil companies to oppose constructive legislation of any kind that Congress desires to enact.

The matter of the pollution of the waters by oil has been up from time to time before Congress. About a week ago, a committee representing the American Petroleum Institute, at the invitation of Secretary Hoover, came to Washington and had a conference with Secretary Hoover, at which time we outlined our views, and the Secretary of Commerce outlined his views as to this whole proposition. We told him at that time that we would be very glad to lend our assistance and that of the association to investigate and work out any possible plan that would enable him to set up such a set of regulations as Congress would approve.

So far as the oil companies are concerned, they are not here for the purpose of knocking any legislation at all, but they want to be helpful. As we understand it, the whole thing is applicable to all classes of citizens, whether they are in business or not, and this is a problem which is a tremendous one, and one that Congress can not take too deep an interest in for the purpose of solving it in a just and fair way to all concerned.

Oil at the present time seems to be one of the most important phases of the foreign policy of the United States. It is not necessary for me to call the attention of the members of this committee to the notes that have been exchanged between the foreign Governments and our Government as to the matter of exploiting and prospecting to get oil in foreign countries.

Mr. LAYTON. We have given $25,000,000 to Colombia.

Mr. HAYS. Yes. But there is an act in existence which takes care of the situation which we are discussing, so far as New York Harbor is concerned. It is known as the New York Harbor act, and prosecutions are being conducted under that act. Offenders are being brought up before the courts and are being fined. As to whether or not the department which has charge of the litigation and prosecution of those violations is on the job and handling the work promptly is another matter with which I am not familiar. But I know this, as representing one of the oil companies, that we have been haled before the court, not for the reason that we have been discharging bilge water into the harbor of New York, not for putting over from our tankers crude oil and dumping it into the harbor of New York intentionally; but our violations have been where there has been an accident in connection with the tanks or the shore pumps connected with the vessels. It has been merely a loss of man power and no intentional violation of the law at all. An inspector comes along and sticks his bottle down, and possibly six barrels of crude oil have gone over the tanks, and he hales you to court, and you explain that there is no intentional violation of the law, and the court admits that such is the case. But the court says that unfortunately you have technically violated this act, and there is no discretion given the court. The minimum fine is $500, and the maximum fine is $2,500. The court says, "I must fine you this minimum fine." The result is that while there have not been many of these violations by the company I represent, still there have been those technical violations which in most cases have not been intentional violations of the act.

Mr. CLOUSE. Is that a State or a Federal law?

Mr. HAYS. It is the New York Harbor act, a Federal law.

Mr. APPLEBY. Do you represent the Standard Oil Co.?

Mr. HAYS. Yes; I do. So far as pollutions from refineries are concerned, in New York Harbor at least we have not been haled before the courts at all. I do not think they have found any such violations, and they have not prosecuted us for the discharging of our bilge waters.

When the crude petroleum is taken from the producing countries and brought into the harbor of New York it is connected up with the refineries, and the crude oil is pumped into the refineries. They then wash out the tanks, and they put that stuff through the separators in order to get the oil out. When the tanker leaves, if it can take on some clean cargo, it will take fuel oil, but if it is going back to the country which produces the crude oil it more likely will fill up with ballast water. That, of course, is not discharged in the harbor of New York, and the crude petroleum is not discharged in the harbor, so that the tankers coming into the harbor of New York with crude petroleum have not had any violations charged against them. If there is any violation at all, so far as a ship is concerned, it is largely from the cargo-carrying vessels and passenger-carrying vessels, which have changed over from coal-burning to oil-burning. Possibly those vessels will take on a sufficient quantity of fuel oil to carry them to England, for instance, and back. If they have not sufficient fuel oil to bring them back, they take the balance on in England to bring them back to New York. That, possibly, is consumed when they get into the harbor, or practically so. I do not know how they dispose of their bilge water.

Mr. APPLEBY. In the mass of communications I have in reference to this matter a letter stating that the Standard Oil Co. says that if the refuse which is pumped out in and out of the harbor was brought to them in barges it could be used as a by-product. Do you know anything about that?

Mr. HAYS. Mr. Appleby, I do not know about that personally. But I should think if the refuse oil could be properly gathered up something could be done with it. There is no question about it at all. But speaking from a technical point of view I do not know whether it could be done.

Mr. LAYTON. Why do you do it?

Mr. HAYS. Do what?

Mr. LAYTON. Why do you have these separators that you spoke of a few moments ago?

Mr. HAYS. We want to save all the oil we can.

Mr. LAYTON. Why should you not save more oil if you had this system established so you could get the oil-burning ships, in the aggregate, to engage in that practice?

Mr. HAYS. I have not given any thought to that feature of the subject. I suppose that some arrangement could be made whereby the Federal Government or the New York State government could arrange some means for the collecting of this oil refuse, if some place on land could be arranged for where that refuse oil could be properly converted into the proper kind of by-products. As it is now, there are no means there by which the merchant marine that comes into the harbor of New York can get rid of or take care of their bilge water, which is sometimes, of course, mixed with the oil.

Mr. NEUBERGER. Is it not a fact that at a meeting of the board of water carriers in New York, at which the Standard Oil Co. was represented, their representative stated publicly that they would take all this refuse if it was brought to them?

Mr. HAYS. If you say that is a fact, and there was a representative of the Standard Oil Co. there, I will not dispute the gentleman's word.

Mr. NEUBERGER. I was not present.

Mr. HAYS. Neither was I.

Mr. NEUBERGER. It was publicly stated; practically every paper in New York reported it.

Mr. HAYS. They always report what is proper and true, of course.

So far as violations are concerned, Mr. Chairman, in New York Harbor, we have not been haled up into cour for the other violations we have been speaking about. There have been technical violations, but so far as any violation by the company itself is concerned, I think I can send you all of our rules and regulations made by our marine department, under which we are calling captains of ships and bringing them in and schooling them, and instructing them in every way possible not to permit pollution of any kind or character by the discharge of oil. We do not allow it; we do not care to violate the law. I would be very glad to send copies of those regulations and of the notices that we give to the captains to the members of the committee. So I think it will be admitted, so far as we are concerned, that we are doing everything possible to materially assist in this proposition to work out some proper solution of the problem.

I think, however, that the matter is of such tremendous moment that there should be an investigation by the Department of Commerce to take in all the other manufacturing establishments of all kinds and character in order to find out what percentage they do pollute. There may be pollution by oil. Oil is readily seen, because it is on top of the water, whereas acids and chemicals go underneath the water.

Mr. LAYTON. They are dissolved in the water?

Mr. HAYS. Yes. The oil is readily seen. As far as throwing oil upon the shores of New Jersey is concerned, that is a bad thing, and some means should be found to help out the residents along the shore.

But I am wondering how, in cases where the tankers go out 10 or 15 miles and discharge their bilge water on the high seas, any legislation enacted by Congress can handle that, unless we follow Mr. Neuberger's idea. He says that when a vessel leaves the harbor we can make them have their tanks clean. That may be possible.

Mr. LAYTON. By way of regulations on the part of the United States Government in connection with the issuance of clearance papers?

Mr. HAYS. Yes, sir.

Mr. LAYTON. Why not make those regulations to conform with the statements in the petition submitted by Mr. Neuberger, which says, "The law should be amended so as to deny clearance to all tankers and oil-burning craft unless as a condition precedent they prove to the satisfaction of the shipping authorities that the entire process of cleaning out oil, oil residuum, oil slop, and water ballast has been conducted while in port, and in such manner in port that no tar oil waste shall have entered the waters of the harbor or any of its tributaries."

Mr. HAYS. I understand Mr. Neuberger's suggestion; and I think also, Dr. Layton, that this whole proposition is individual as well as collective. You have got to educate your industrial concerns so that they will understand that they are to take every means possible, so far as progressive business is concerned, to help in the general welfare of the country.

Mr. LAYTON. So far as I am concerned, from my own knowledge of what is called shellfishing—and I come from a shellfish section—I am satisfied that the oil pollution is not altogether the only source of the menace to the shellfish.

Mr. HAYS. I think that is only a very small percentage of the trouble.

Mr. LAYTON. Every manufacturing establishment has some refuse which is deleterious to water life, which gives us our shell fish or our supply of sea food.

Mr. HAYS. In New Jersey they have an act which includes all of these poisonous substances, and I do not see why there have not been prosecutions under that act, where those substances are coming down the other rivers that wash into the navigable streams. Nearly every State has some kind of legislation which takes care of the fish.

Mr. LAYTON. It is always a wonder to me how a Delawarean can go to those points and catch fish of any sort, when you think of the thousands of establishments all the way up the Delaware River whose poisonous refuse runs down those streams.

Mr. HAYS. Dr. Smith, of the Bureau of Fisheries, admitted in the conference we had the other day, that so far as the Schuylkill River was concerned, there could not be any question at all, because the fish there had been destroyed a number of years ago.

STATEMENT OF MR. F. S. McILHENY, OF PHILADELPHIA, PA.

Mr. MCILHENY. Mr. Chairman, so far as Dr. Layton's questions in regard to unloading the tankers in port are concerned, we do that anyway. When a tanker comes up the Delaware River, the tanker is tied to the wharf and its bilge or ballast sea water, which has been put in in place of the oil which has been taken out, is all pumped into the separators, and the water that comes from the separators is practically clear.

Of course, this bill which you are now considering is much bigger than the rivers of Delaware or the rivers of New York, or the New Jersey coast.

The members of this committee know the rivers and harbors better than I do, but as I understand it this bill affects every navigable water in the United States. Every water which touches two or more States, or which leads into water that touches two or more States, or which leads into the ocean, is a navigable water. So practically every water in the United States which has any size would be affected by this bill. No matter where it may be, this bill provides that you shall not put a drop of oil in any navigable water in the United States. That means that there may be a technical violation by some man on some little water in the western or middle part of the country, which water is between two States; if some man cleans out his motor boat and puts a little oil in the water, he would be subject, technically, to this fine provided in this bill. It seems to me you have to have some kind of a bill which will take cognizance of the varying conditions in various parts of the country. You have to have regulations of some kind which say that in certain places you can do it and in certain other

places you can not do it, and you can not make a sweeping law which says that no oil, under any conditions, shall be put into a navigable waterway.

For instance, the Kennebec River in Maine is a river largely devoted to either fisheries or to pleasure resorts in the summer time. It would be manifestly unfair to put any oil into that river, which was a factor. Then, take for instance, some river in the State of Texas, where the business of that locality is oil. It might not be to the interest of that particular community that there should be an obsolute prohibition against putting any kind of oil into the water. So it seems to us that while, as oil people, we do not oppose proper legislation, it is a great hardship to the people on the New Jersey coast, and I do not think that small business should be given less rights than big business.

It seems to me that the legislation which you enact will have to be some proper kind of legislation framed after exhaustive hearings at which everybody all over the country may be heard by this committee, or else it will have to be put into the hands of some regulatory department, such as the Department of Commerce, to make regulations, and let them define what is pollution and what is not pollution.

The amount of oil that flows down these streams is much less than the amount of other things. Practically every factory or industry in this country puts some kind of refuse into the water which is injurious to fish. Almost every industry uses sulphuric acid. So, too, textile mills use these things. This bill does not touch them at all, unless they are located on the banks of a river. In Philadelphia we have hundreds of factories throughout the city which pump their refuse into the sewers. That eventually finds its way into the river, and this bill will not affect them at all. It is only the fellow who is located on the river who would be affected by this bill.

I think you will find that a large part of the oil pollution comes from the sewers. These communities along the New Jersey coast are filled up with garages. Every one of these garage men, when they clean out a crank case, dump that oil into the sewer, and it eventually finds its way into the rivers.

An investigation was made in Philadelphia not very long ago, and it was found that out of every one of these sewers you could see flowing whirling bits of oil on the top of the water. This is a big subject, and it is going to take almost a superhuman intelligence to reach the matter intelligently.

I was in the Legislature of Pennsylvania for eight years, and I know the difficulty in drawing a bill which is fair to all parties concerned, even if you have all the information necessary for the drawing of the bill.

The only suggestion I would make in regard to the bill is that you must define pollution. If we have any regulation at all I think there must be some definition saying just what is injurious and what is not.

The only other thought I have to suggest is that I think it is a mistake to put a clause in the bill giving a part of the fine to the informer.

Mr. OSBORNE. Is it your construction of the bill under consideration that if a man pours oil into a sewer, and if that oil finally passes out to the ocean, it will not be any violation of the law?

Mr. MCILHENY. No; the bill distinctly omits sewers.

STATEMENT OF MR. WILLIAM FRANCIS GIBBS, CHAIRMAN OF THE TECHNICAL COMMITTEE OF THE AMERICAN STEAMSHIP OWNERS' ASSOCIATION.

Mr. GIBBS. Mr. Chairman and gentlemen of the committee, I am chairman of the technical committee of the American Steamship Owners' Association. I was asked by the association to come here and present their views in respect to the merchant steamers, the mercantile marine. There is also another member of that committee here, Mr. Thomas Donnelly.

The American Steamship Owners' Association consists of about 71 members, and the members of the association control and own about 3,500,000 tons of merchant shipping. I ask leave to insert in the record a list of the members of the association so you will know what it comprises.

(The list referred to is as follows:)

American Ships & Commerce Navigation Corporation.
American-Hawaiian Steamship Co.
American Italian Commercial Corporation.
American Transportation Co. (James W. Elwell & Co.).
Atlantic Refining Co.
Barber Steamship Lines (Inc.).
Bliss, Dallett & Co. (Red "D" Line).
Bull Steamship Co., A. H.

Caribbean Steamship Co. (Ltd.).
Chile Steamship Co.
China Mail Steamship Co. (Ltd.).
Clinchfield Navigation Co. (Inc.).
Clyde Steamship Co.
Coastwise Transportation Co.
Colonial Navigation Co.
Crowell & Thurlow Steamship Co.
Dollar Steamship Co.
Eastern Steamship Lines (Inc.).
France & Canada Steamship Corporation.
Freeport Sulphur Transportation Co.
Garland Steamship Corporation.
Grace & Co., W. R. (Atlantic & Pacific Steamship Co.).
Green Star Steamship Corporation.
Gulf Refining Co.
Gulf & Southern Steamship Co.
Harriss, Magill & Co. (Inc.).
Hartford & New York Transportation Co.
International Mercantile Marine Co.
Luckenbach Steamship Co. (Inc.).
Mallory Steamship Co.
Maru Navigation Co.
Matson Navigation Co.
Merchants & Miners Transportation Co.
Moore & McCormack Co. (Inc.).
Great Northwestern Shipping Corporation.
Munson Steamship Line.
New England Fuel & Transportation Co.
New England Steamship Co.
New York & Cuba Mail Steamship Co.
New York & Porto Rico Steamship Co.
Ocean Steamship Co. of Savannah.
Oceanic Steamship Co.
Old Dominion Steamship Co.
Ore Steamship Corporation.
Oriental Navigation Co.
Pacific Mail Steamship Co.
Pacific Steamship Co. (Admiral Line).
Pan-American Petroleum & Transport Co.
Peninsular & Occidental Steamship Co.
Pocahontas Fuel Co. (Inc.).
San Francisco & Portland Steamship Lines.
Seaboard & Gulf Steamship Co.
Smith, R. Lawrence (Inc.).
Southern Pacific Co.
Southern Steamship Co.
Sprague & Son, C. H.
Standard Oil Co. of New Jersey.
Standard Oil Co. of New York.
States Marine & Commercial Co. (Inc.).
Strachan Shipping Co.
Sun Co.
Susquehanna Steamship Co. (Inc.).
Swayne & Hoyt (Arrow Line).
Texas Steamship Co.
Union Oil Co. of California.
Union Sulphur Co.
United Fruit Co.
United Steel Products Co.
Vacuum Oil Co.
Warren Transportation Co.
Tide Water Oil Co.

Mr. GIBBS. There is no industry in the United States to-day that is fighting harder, under greater difficulties than the mercantile marine. You have all heard the question discussed as to whether we shall have subsidies and what the policy of the mercantile marine will be. Those questions are always addressed to the mercantile marine which is controlled by the United States Government. The companies I

represent own and control three and a half million tons of shipping, and they are in competition with the world, and they have behind them no support whatever from the Government. In other words, there is no subsidy; there is nothing to help them out.

Mr. DUPRÉ. Are they all American-owned?

Mr. GIBBS. Yes, they are all American-owned. But that does not mean that some of them do not control some foreign flag tonnage, but the total of that tonnage controlled by the association is very, very small.

The fact is that in the American merchant marine to-day we have about 61 per cent of all the oil-burning steamers in the world. And when I say oil-burning steamers, I am speaking of tankers, steamers that simply use fuel oil in place of coal. Those ships have a great advantage because they can carry oil in spaces in the vessel which can not carry coal, and thus they enlarge very much their cargo-carrying capacity.

It is a fact that nearly all the ships of that kind, because of the cheap price of oil in the United States, are in the habit of filling their fuel-oil tanks here and then putting enough into the tanks to carry them to their destination on the other side and return again. It is also true that a large percentage of the cargo movement from the United States is a movement away from the United States. The movement of return cargoes, except in the case of some tank steamers and other specialized business is very small, because that movement is largely carried by foreign ships. That means that these ships are coming toward the United States after they have discharged their load of United States goods in foreign ports; they are coming toward the United States in ballast condition. In other words, the ship has practically no load on board to make the ship navigable and give it sufficient stability so it will not upset. Therefore it is essential that it shall carry ballast. That ballast is, in nearly all cases, water ballast, and the water ballast is put into the tanks that contained the fuel oil on the outward voyage. When those ships approach the United States port they discharge the water from the ballast tanks. In some cases, due to the inefficient operation of the vessel, it is possible that oil has remained in the tank and not been fully discharged when they were putting it under the boilers, and the water discharged from the tanks carries some oil. The difficulty is that those ships can not discharge that water a great distance from the land because unless they have this ballast on board they are not navigable; they are too light; their propeller is so far out of water that they can not navigate.

In the case of a great number of ships they are not even stable. That is not a defect in design, because the ships have been designed that way, but it is simply a fact that you have to face.

When those ships come into the port of New York they have to have some water in their tanks, and they must discharge that water in the harbor or at their dock before they put on board their fuel oil for the next voyage.

Mr. OSBORNE. Why is that necessary?

Mr. GIBBS. Because the tanks that contain the fuel on the outward voyage contain the water ballast on the inward voyage.

Mr. OSBORNE. Why is it necessary to bring it into the harbor?

Mr. GIBBS. Because unless you have water in the tanks you can not navigate the ship. It has to have the stability that is given by the water which is put into those tanks. You can pump out some of it, and that is done a good distance from the land. But some of it has to be retained to make the ship stable.

If you adopt a drastic provision denying the ships the right to pump that water overboard because it may possibly contain oil, you aim a blow directly at the privately owned merchant shipping of the United States. Where you will affect one foreign ship under that regulation you will affect probably five American ships, because the American ships are trading with American ports, and the foreign ships are trading all over the world.

Mr. CHALMERS. Would it not be possible to test these compartments before you fill them with water, to see that they are empty?

Mr. GIBBS. That is customarily done, and a great number of companies go a step further. They fill and empty those compartments with water two or three times a great many miles out at sea before they are finally filled with water, so that as far as possible they are cleared of oil.

Mr. CHALMERS. It occurs to me that if that were done there would then not be anything in the water that would be pumped into the harbor that would be objectionable, and if there were any compartment that you had not thoroughly tested, that compartment might be emptied at sea, and the compartment carrying the pure water that was carried to the dock might be emptied there.

Mr. GIBBS. That is the policy that all of the merchant shipping is following so far as it is possible. Yet it happens that in certain cases of the double-bottomed tanks which have a large number of fine pockets in them, it is possible even after washing

through the tank two or three times that in a particular situation we get a small discharge of oil from that tank. But the fact is that it is relatively small.

This matter of the discharge of the oily ballast water is a thing which is under consideration in all the ports of the world. It is not an American problem at all. It is as much before the people of Great Britain as it is before the people here, and I can give you some information on that.

Mr. CHALMERS. Inasmuch as our time is short, why can we not let Mr. Gibbs put that in the record?

Mr. GIBBS. I can say it in two or three minutes.

Mr. LAYTON. I think this is very interesting and it bears on the most important part of this investigation. So I move that Mr. Gibbs's time be extended five minutes.

(The motion was agreed to.)

Mr. TAYLOR. In the foreign ports they are under the control of what is known as the port authorities, bodies which are under the general supervision of the central government, and they are providing there the necessary facilities to handle this oily water and convey it to the necessary separators and take the oil out of the water overboard. In other words, they regard that problem in exactly the same way as we regard the problem of the sewage in a city. In other words, nobody here could put his sewage in his back yard. The State and the city make provisions by which he can have that sewage handled, and it is a relatively small burden on everybody. If you had a town in which local sewage was the rule, and you decide you are going to put in a sewage system, and before you do that you deny the man the right to discharge his sewage, what is his position?

That is just the same as we have done in the case of the merchant marine.

So, gentlemen, we are very anxious that this problem be solved. But you must realize that the value of the shipping affected is enormous. This Government has spent three and a half billions for the merchant marine. The largest proportion of those ships are oil-burning steamers. I think the private shipping is worth a billion and a half dollars more. That shows you what a big industry it is, and an absolutely unprotected industry to date.

Mr. OSBORNE. You are handicapped also by law?

Mr. GIBBS. That is it exactly.

(Thereupon, the committee took a recess until 1.30 o'clock p. m.)

AFTER RECESS.

The committee reassembled, pursuant to the taking of the recess, at 1.30 o'clock p. m.

STATEMENT OF MR. WILLIAM FRANCIS GIBBS, CHAIRMAN OF THE TECHNICAL COMMITTEE OF THE AMERICAN STEAMSHIP OWNERS' ASSOCIATION—Continued.

Mr. OSBORNE. Mr. Gibbs, I understand you have something else you desire to present to the committee, and you may proceed.

Mr. GIBBS. Mr. Chairman, it seems to me you must remember that the sources of pollution of the water that is affected by the bills you have under consideration are considerable in number. I have in mind the pollution caused by acids and alkalies, the pollution caused by the oil in sewers in big cities like New York, where oil is being thrown continuously into the sewers, the oil thrown possibly from land plants, and the oil from shipyards repairing oil-using steamers, in which they have to clear out the tanks and dispose of that oil in some way; and finally that caused by ships. So that oil pollution caused by ships is only one of five sources, and the fact that this pollution other than by oil can be very severe will be found in a place like Jamaica Bay, a place where it had become impossible to raise oysters. The fact was that Jamaica Bay was an area into which one of the metropolitan sewers opened, and the Health Department of New York prohibited the raising of oysters in Jamaica Bay because the oysters contained disease germs which were in no way traceable to the waters themselves in that bay.

In connection with the method to be pursued in regulating this proposition it seems to me because it is so very important, because the sources of pollution are so many, because the local conditions in various parts of the country are so different, that a certain latitude should be allowed in regulating it. It seems to me that the regulations should only go hand in hand with the means provided to meet the difficulty.

I have in mind the necessity of providing, if you are going to prohibit absolutely the discharge of ballast water from oil tanks in merchant shipping in harbors, in those harbors, under some sort of governmental supervision, barges, or something like that

to take the oil away as it accumulates. It seems to me that could be best done under some department like the Department of Commerce, in which the local rules in various parts of the country might be modified.

All oil-burning steamers before they can be operated have to meet the requirements of the Department of Commerce, through the Steamboat Inspection Service. Every one of the boats toward which complaint is being directed—and I am speaking of the merchant steamers first, apart from the oil tank steamers—are under the inspection of the Steamboat Inspection Service, and I submit that it would be a grave injustice to require the owners of those steamers to make the necessary structural changes or an expensive disposal of this ballast water, which is essential in the operation of the ship, unless a means is provided by the Government to dispose of it.

To put a burden upon those shipowners, after they have built their ships and everything is being carried in accordance with Government regulations, to require the further expenditure on the part of the owners of a good deal of money, a very heavy expenditure, which would mitigate against the American ship in the proportion of five to one as opposed to the foreign ships, would seem to me to be a grave mistake. I believe the best result can be obtained by taking the remedy along with the prohibition and working them both out together in a satisfactory manner in all parts of the country.

I will be glad to answer any questions, because I want to be sure that the members of the committee and the proponents of this legislation are clear as to the necessities that govern us in disposing of this ballast water.

Mr. APPLEBY. When the members of the Rivers and Harbors Committee were in New York Harbor in June, making an inspection, right near Jamaica Bay the boat got aground, and before they could get it floated to the middle of the channel, the boat had stirred up an immense volume of very heavy oil, in the shape of asphalt, evidently coming up from the bottom, because when the propeller churned around a lot of it was brought up, so that the whole area around the boat was covered by oil, which evidently had gone to the bottom of New York Harbor. How do you account for that?

Mr. GIBBS. I think that can very possibly be so, but the fact that it is so does not touch the question of the reason for the prohibition in regard to the raising of oysters that was applied to Jamaica Bay. That prohibition was because of the fact that Jamaica Bay was found to have sewerage in it, and not oil. There may have been oil there, too. as is common on other parts of the coast.

Mr. APPLEBY. This demonstration occurred around the Far Rockaway section.

Mr. GIBBS. Of course, you must remember it may be—I am not familiar with the time when you were there—but there was an occasion when one of the oil tank steamers was wrecked on the shore of Long Island, and a large amount of oil was scattered around there at that time, and that was something which no regulation could cover.

Mr. OSBORNE. Your explanation has been so clear that I have no questions to ask you.

STATEMENT OF MR. HUGH P. BAKER, SECRETARY OF THE AMERICAN PAPER AND PULP ASSOCIATION, NEW YORK, N. Y.

Mr. BAKER. Mr. Chairman, I represent the manufacturers of paper in the United States through their national federated organization, the American Paper and Pulp Association.

There are some thousand paper and pulp mills in the United States, located almost entirely upon streams. The paper industry is absolutely dependent upon the good supply of pure water. When you consider that it takes from fifty to two hundred thousand gallons of water for every ton of paper produced, and that there are produced in the neighborhood of 6,000,000 tons a year in the United States, you get some idea of the quantity of water used in the paper industry.

I take it there are two parts to this bill, and the first part, referring to various forms of oil has been very ably presented this morning. There is the second part which takes in all manufacturing establishments and mills of any kind, located not only upon navigable streams, but upon any tributary of a navigable stream. So a paper mill, even though located way off in the interior, is just as subject to the provisions of this bill, should it be passed, as it now reads, as a manufacturing plant at the mouth of the Delaware River, or any other manufacturing plant.

I do not want to put the paper industry in the position of being opposed to the solving of this problem of stream pollution. We are concerned with it; we want good, clean water. We do not dump into the streams water or waste laden with acids, the waste from our mills being largely of an alkaline nature.

Furthermore, most of our mills are upon the headwaters of streams and this bill would go back to the springs from which the stream comes, and the water taken through the mill, passing back into the stream even a few hundred feet loses, as a rule, the material carried into it from the mill. This problem is so big that we are merely asking that the whole question in regard to the industries of the country, as has been brought out here this morning, in relation to such legislation as this be given very careful consideration and investigation.

The paper industry, like many other industries at the present time, is struggling back to its feet, and the men like you, representing us here in Washington, are assisting in the restoration of business. If this bill should go through as it is now, without modification, it would tend to drive a number of paper mills into Canada, as a number of them have already followed the forests across into Canada. We want to keep the paper industry as a permanent industry in this country, and I believe this bill as it stands would work a great hardship upon the paper manufacturing industry as upon many industries located upon our streams.

We are deeply interested in this and want to find a solution for this problem in a large, broad way that will not injure industry and business in the country.

STATEMENT OF MR. R. P. WHITEHEAD, REPRESENTING THE NEW YORK AND NEW JERSEY DRY DOCK ASSOCIATION.

Mr. WHITEHEAD. Mr. Chairman and gentlemen, I represent the New York and New Jersey Dry Dock Association. This association wants to state to the committee that they are in hearty sympathy with the purposes sought to be achieved by this legislation. They have already cooperated with the local authorities of New York and New Jersey in trying to work out a satisfactory solution of the problem.

Two years ago, largely through our instrumentality, the board of aldermen in New York adopted an ordinance seeking to prevent the pollution of the water in this manner. The association is also a member of the committee appointed by the supervisor of the harbor of New York, which is now attempting to work out some plan in relation to the same question.

Our association feels, however, that this question can best be settled by them with regard to the public at large and the manufacturing and other industries that are connected with it by some method that has already been suggested, such as the receiving and disposing of this waste oil through barges in the various harbors, particularly, of course, in New York Harbor.

The committee in New York has already decided to recommend to the city of New York that they construct barges and undertake this work. We believe if the question is taken up in that way and the Federal Government should cooperate with the various municipalities and States that are affected, the question can be worked out just as satisfactorily, and probably more economically, than through legislation.

It has been suggested that it might be used by the Standard Oil Co. We believe it might also be used by the highways of the various States and cities. I am referring to the oil which would be separated from the water.

I desire to reiterate that we are in thorough accord with the purposes sought to be achieved by the legislation you are now considering.

STATEMENT OF MR. THOMAS H. GERRY, OF CLEVELAND, OHIO, REPRESENTING THE LAKE CARRIERS' ASSOCIATION.

Mr. GERRY. Mr. Chairman, I represent the Lake Carriers' Association, to which belong all of the Lake freighters of the Great Lakes, and I would not want to be identified as opposing the measure at all. I know of no reason why the Lake Carriers' Association or vessel owners would oppose it.

We want to call your attention to one or two things in reference to it.

We say that if the bill is passed as is now written, there is no steamer operating anywhere that could operate at all. Your bill is so inclusive that it prohibits the putting of a single drop of oil in navigable waters from a ship. I take it that that is an inadvertance in the writing of the bill. Nothing has been said this morning by any proponent of the bill which would indicate that it is desired to have the provisions of the measure go as far as that.

Mr. CHALMERS. What suggestion would you make as to amending the bill?

Mr. GERRY. One suggestion would be that boats might operate under conditions imposed by the Steamboat-Inspection Service. Under their general authority they require that all freighters carry a certain amount of oil known as storm oil, which is used on the occasion of storms and is a very necessary part of the equipment.

An engine, in operating, lets out a little oil, but this bill would prohibit that.

We have done this, Mr. Chairman. We have come down here—Capt. Bailey, the fleet superintendent of one of our largest fleets, and Mr. Riley, the fleet engineer of another large fleet, who will be glad to explain to you why this bill would interfere with the operation of the boats in the very best way. We have also here Mr. Leckie, who represents the passenger boats. Every one of them say that this bill, if it is passed as it is written, would cause those boats to cease operations. We are quite sure that, that fact being called to your attention, the bill will be modified before being passed.

If you want to write changes in the bill you should provide that nothing in the bill should operate to prevent the use of storm oil when necessary, and that nothing should be construed to mean that a steamer, in its proper operation, should not have oil go out of its cylinders.

We are not opposed to the bill; we are not acquainted with it. There are no oil burners on the Lakes, so far as I know.

Mr. CHALMERS. At this time.

Mr. GERRY. At this time. There may be some later. There are some tank steamers that carry oil.

I am sure Mr. Leckie would like to be heard for just a moment.

STATEMENT OF MR. F. L. LECKIE, REPRESENTING THE GREAT LAKES PASSENGER LINES ASSOCIATION, THE GREAT LAKES SAND AND GRAVEL PRODUCERS' ASSOCIATION, AND THE GREAT LAKES LUMBER CARRIERS ASSOCIATION.

Mr. LECKIE. Mr. Chairman, I represent the Great Lakes Passenger Lines' Association, the Great Lakes Sand and Gravel Producers' Association, and the Great Lakes Lumber Carriers' Association, all of whom operate large fleets on the Great Lakes, none of which are oil burners. I do not believe we have a solitary oil burner on the Great Lakes at this time. We have a few tankers that belong to the Standard Oil Co., or its subsidiaries. But I do not believe there are more than four or five altogether.

Most of the statements I have heard this morning have been directed at the oil burners or oil tankers, and we have nothing of that sort. I have heard no criticism of that kind, even in regard to the oil tankers that we have on the lakes. We are, therefore, not against the spirit of the bill at all; it is only against the letter of the proposed legislation, as it is written.

I second every remark that Mr. Gerry has made. All of our ships necessarily discharge a little oil. The engines we have up there are what are called condensing engines, and there is some cylinder oil used in our cylinders, and as our engines operate on every revolution of the engine there is a jet of water that goes over, and that is coming through the cylinders as steam, and the steam is shot through cold water, which condenses the steam which goes through the cylinders and goes out over the side of the ship. It is not as it is in the case of salt water, where they use the same water over and over again. That water is discharged over the side of the ship through a big pipe, and it has some oil in it, but not very much. You can drink it; I have drunk it a good many times. It is good for dyspepsia.

There is another place that some oil comes out, because there is a great mass of machinery which you can not run without lubrication. Our ships carry big cargoes and there is oil on the machinery which, is there, of necessity, so that it may be lubricated. That is pumped over the side, but that does not amount to much.

There is another possible source, besides the storm oil, which is now required by statute, and which we use right along. Our big boats must run in between tiers, in some cases where the tiers are not over 200 feet wide, and we have to go as straight as can be, and we have to use oil to smooth the water so that we can navigate the ships in stormy weather. There is another source from which the oil comes.

Mr. CHALMERS. What kind of oil do you use in that case?

Mr. LECKIE. I think that is a special preparation, but it is oil which comes under the terms of this bill.

There is one other source where there might be a little bit of oil come over. We have in times past, and I think we do yet, had water ballast in our water tanks in the bottom of our ships, and it has been the practice to black oil those water tanks to keep them from getting rusty. I suppose the first few times the water ballast is poured overboard there would be a little oil go over, too, but the little bit that gets overboard from our ships is practically clear, and yet the way this bill is now drawn it would compel our boats to tie up at the dock.

This is a big industry. One gentleman spoke about the oysters in Jamaica Bay representing a million dollar proposition. But one of our boats cost $1,300,000 and we have hundreds of them.

I am sure it is not the intention of the framers of this bill to try to stop the operation of ships of that kind.

Mr. CHALMERS. Mr. Chairman, I do not believe it would be profitable for us in considering this legislation to hear all the lake people, because as I understand it, it is not the intention of the committee in any way to interfere with this business on the Great Lakes.

Mr. OSBORNE. The particular oil spoken of here is practically negilgible.

Mr. CHALMERS. There are a number of Great Lakes members on this committee, and I do not think it was the intention to interfere with that business.

Mr. LECKIE. We have some pollution of the waters, but I have never heard of oil being the cause of it.

Mr. CHALMERS. This is very interesting to us, but I do not believe it is necessary to go further into it, so far as the Great Lakes are concerned.

Mr. LECKIE. If we could have the Great Lakes eliminated, it would solve that proposition.

STATEMENT OF MR. SCHUYLER O. BLAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF VIRGINIA.

Mr. BLAND. Mr. Chairman, there have been several bills introduced on this subject. I have introduced a bill which is along the line of the bill introduced by Mr. Briggs of Texas, and also the bill introduced by Mr. Edmonds, which is pending before the Committee on Interstate and Foreign Commerce.

I do not undertake in the bill which I have introduced, to offer an independent proposition. In other words, my bill simply undertakes to amend a section of the existing law, to wit, section 13 of the act entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes."

Mr. OSBORNE. That is the act of 1899.

Mr. BLAND. That is the act of 1899, yes. In the first place, in the Appleby bill, there is a provision that the only sewage that is thrown over shall be sewage passing in a liquid form. I eliminate that by making it "other than ordinary sewage from streets, sewers, or vessels into any navigable water of the United States."

One reason for that is this: In almost every municipality of this country ordinary sewage passes into the waters, and to change that situation would place a burden on many communities that would practically bankrupt them. I am told that it would cost from a million to two million dollars to make a change in the sewage system in my own city of Newport News.

The only other change I have made from existing law is that in the existing law there appears the language "whereby navigation shall or may be impeded or obstructed." That appears just before the first proviso in section 13.

It has been contended in various controversies in my section that that language applies to all of the preceding portions of the section. I think that the section applies, and is intended to apply only, to material placed on the bank. So I have so changed it that there may be no doubt but that the language does apply to the material that is deposited on the banks.

The only other change is to insert the words "oil, any oil, oil fuel, oil sludge, or any other oil refuse."

Just one more word. This is matter which is important to the people in my section. We have valuable oyster beds in my section, the largest seed oyster supply, probably in the world, being located in the James River, and that is threatened with destruction. The people of my section tell me, some of them who have gone out in the water, that they have found it necessary to use gasoline after they have come out of the water to cleanse themselves.

If it had been known that there was to be a hearing on this matter to-day, there would have been a large crowd here from my section of the country, where they are so much affected by this pollution. The matter is just as important for the people of Hampton Roads as for the people of the north Atlantic coast, because our fish industry is threatened with destruction, and we feel that something ought to be done. I seriously doubt that you would be able to go as far as would be desired just at this time. One reason why I prefer amending section 13 of the existing law is that the penalties contained in section 17 are more drastic than those Mr. Appleby has in his bill. I think the penalties contained in the Appleby bill are less drastic than they ought to be to properly enforce it.

Mr. OSBORNE. You might put a copy of your bill in the record.
Mr. BLAND. I will be glad to do that. My bill reads as follows:

"[H. R. 8730.]

"A BILL To amend section 13 of the river and harbor act of March 3, 1899.

"*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled*, That section 13 of the act entitled 'An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes,' approved March 3, 1899, be, and is hereby, amended to read as follows:

"'SEC. 13. That it shall be unlawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited, either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, any oil, fuel oil, oil sludge, or any other oil refuse, or any refuse matter of any kind or description whatever other than ordinary sewage from streets, sewers, or vessels into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall be unlawful to deposit, or cause, suffer, or procure to be deposited, material of any kind whereby navigation shall or may be impeded or obstructed in any place on the bank of any navigable water, or on the bank of any tributary of any navigable water, where the same shall be liable to be washed into such navigable water, either by ordinary or high tides or by storms or floods or otherwise: *Provided*, That nothing herein contained shall extend to, apply to, or prohibit the operations in connection with the improvement of navigable waters or construction of public works considered necessary and proper by the United States officers supervising such improvement or public work: *Provided further*, That the Secretary of War, whenever in the judgment of the Chief of Engineers anchorage and navigation will not be injured thereby, may permit the deposit of any material above mentioned other than oil, fuel oil, oil sludge, or any other oil refuse, in navigable waters within limits to be defined and under conditions to be prescribed by him, providing application is made to him prior to depositing such material; and whenever any permit is so granted the conditions thereof shall be strictly complied with, and any violation thereof shall be unlawful.'"

I will say this, Mr. Chairman, that the city attorney of Newport News, Mr. Massie, was here this morning, and we expected that the other gentlemen here would be heard first, so he is not in the room at this time. But I would ask leave to supplement my remarks as to any other matter I may desire to insert in the record.

Mr. OSBORNE. Without objection, that permission will be granted.

STATEMENT OF MR. GEORGE H. BAILEY, COUNSEL FOR THE AMERICAN MINING CONGRESS.

Mr. BAILEY. Mr. Chairman, I was interested in what was said in regard to eliminating the Great Lakes, and I would like to know whether you also would limit this to the harbors and not have it apply to navigable streams and their tributaries. Representing the mining industry, we are much interested in this proposition, especially in the discussion which will affect navigable and tributary navigable streams, and when you take up that phase of the subject we would like very much to have an opportunity to prepare for hearings at that time.

Mr. OSBORNE. The intention of the committee is to have another session on this bill in about two or three weeks and we will be glad to hear you at that time.

Mr. JOHN CALLAHAN. Mr. Chairman, representing the National Coal Association, we have prepared to be heard to-day, and would greatly appreciate it if you would hear Mr. Taylor, one of our mining engineers.

Mr. OSBORNE. We will hear Mr. Taylor in a short time. First, we will hear Mr. Buck.

STATEMENT OF MR. JOHN H. BUCK, OF HARTFORD, CONN., GENERAL COUNSEL FOR THE MANUFACTURERS' ASSOCIATION OF CONNECTICUT.

Mr. BUCK. Mr. Chairman, I am one of the general counsel for the Manufacturers' Association of Connecticut. That association heard some time Sunday that there was a bill pending here referring to the pollution of navigable streams, and they finally got in touch with me and I took a sleeper last night to come down here and find out what was pending.

I will say I am not authorized by the association, because I could not get in touch with the president, to make an argument either for or against this measure, although our position has been that the question of the prohibition of the pollution of streams should go hand in hand, as Mr. Gibbs said, with some suggestion for the elimination of the pollution that would not be destructive, would not be fatal to the economic operation of factories.

The pending bill would prohibit any mill in the United States from casting into any water of the United States any refuse matter whatever, except mills or factories which happened to be located in a city where they could empty their refuse matter into the sewers. I suppose what is meant by "other than that flowing from streets and sewers," is sewage, but the way the bill is drafted, a mill in Hartford which might empty its refuse matter into the sewers, matter of any character, would not be affected, while a mill in the country could not do that at all, and it would be a great hardship on the mill in the country, which I think was not intended by the proponents of the bill.

After what the chairman said about having another hearing, I assume that any arguments manufacturers would care to make on this bill would be considered at that time, because I have been at hearings before committees of Congress for two or three winters, and I know how impossible it is to give notice to everyone interested in a particular measure. My experience has been that when the committees have realized that a great many people are interested who may not have had notice, they have always been very graciously accommodated.

I merely want to call attention to the nation-wide character of this bill. We are all in favor of the elimination of pollution, and we want to do all we can to assist in eliminating pollution. I simply want the committee to realize what it is going to cost. We calculated in Connecticut last winter that it would cost between $200,000,000 and $300,000,000 if a bill similar to this was passed.

STATEMENT OF MR. SIMPSON EARLE, BALTIMORE, MD., ENGINEER OF THE CONSERVATION COMMISSION OF MARYLAND.

Mr. EARLE. Mr. Chairman and gentlemen, I am here to-day representing Maryland, which controls a very great part of the great inland sea known as the Chesapeake Bay.

Mr. Bland, representing Virginia, spoke of the conditions that they are troubled with in Virginia. We have not, up to a few years ago, been troubled, in Chesapeake Bay, with the conditions as the State north of us has been troubled with. In 1916, while I was engineer of the commission, we had a complaint in regard to a situation near Baltimore, where many people who owned boats would come in there and said that property that they had was being destroyed and made black in one night.

Upon examination, we found that an asphalt plant, a chemical plant, and a plant which was producing oil were throwing their waste into the waters, and a combination of that kind not only turned the boats black in one night, but caused a pollution of the waters that destroyed fish for 5 miles.

Within the last two years, with the increase of oil burners coming to Baltimore, with the great commerce of Baltimore, which is increasing every year, we have found more oil on the waters of Chesapeake Bay within the limits of Maryland during the past year.

Maryland has produced and controls more sea food, in the shape of oysters for the people of the United States than any other State along the Atlantic coast. Our oyster beds exceed 200,000 acres in extent. We employ thousands of people, and these people report to that industry for their livelihood. So we are looking to the conservation of this sea food.

As the past president of the National Association of Fisheries Commissioners, we studied these conditions in regard to pollution from Massachusetts to Texas, and it was the consensus of opinion that we wanted to see this waste matter, as far as possible, eliminated from the waters of the United States.

This can not be done, we believe, from one source, and we would like to see these manufacturing plants, as far as possible, covered by some uniform law, because it is impossible for one State to run down each individual case and then have the board of health cause that particular plant to remedy this trouble.

As representing the State of Maryland, we would like to see some uniform laws, which would affect uniformly all manufacturing plants, and thereby not cause a discrimination, because every city along the Atlantic seaboard is seeking those plants, and if a uniform law was passed the competition would be uniform, and the States would have an equal chance.

I trust that your committee will see fit to do something to eliminate the waste that is going down and destroying our interests in Chesapeake Bay.

I want to say one word in reference to the oil that means destruction to the oyster. The small egg, when it is hatched out, meets a male cell, and after it is fertilized in the water that egg develops a small tail, and that egg then goes clear to the surface of the water. If it comes in contact with oil it is lost. In the last few years we have found that the oyster beds have not been producing the amount of spawn which were produced in previous years. In the Northern States we know that is the case, and the Bureau of Fisheries has been making investigation to see what was the cause of the destruction of that industry, because without the spawning they can not have the young oysters.

I trust something will be done to protect this great industry of the Chesapeake Bay and the people I represent.

Mr. CHALMERS. Do you follow the practice of transplanting?

Mr. EARLE. In Maryland we have leases. We have a survey and then we make the leases, but it is not as extensive as it is in other places.

Mr. CHALMERS. You do not transplant the oysters as they do on the North Atlantic coast?

Mr. EARLE. We have——

Mr. CHALMERS (interposing). For instance, on Long Island Sound they have a great many oyster beds. They bring down the plants from the Connecticut shore and plant them along Long Island. You do not follow that scheme?

Mr. EARLE. No, sir; we are planting in a small way. Maryland has a great many natural beds. A great many of our oysters have helped to build up the industry in the Northern States, because our natural resources were so great.

Mr. NEUBERGER. Has the conservation commission of Maryland made any investigation as to the effect of the pollution of the waters upon migratory birds, ducks, and geese?

Mr. EARLE. Not at this period.

Mr. NEUBERGER. It has never done that?

Mr. EARLE. Not yet.

Mr. NEUBERGER. Are any dead birds found on the bay in that district?

Mr. EARLE. Not to my knowledge.

Mr. NEUBERGER. Has it come to the notice of your commission that the lighting of the birds from the air on the surface of the water on which oil is floating brings about a condition causing them to die, or that they are unable to rise when their wings are matted?

Mr. EARLE. I can not say that I have observed that.

Mr. JOHN CALLAHAN. Mr. Chairman, speaking for the National Coal Associations, I would like to introduce to the committee Mr. Samuel A. Taylor, of Pittsburgh, a practical mining man and producer of coal, and also an eminent mining engineer.

STATEMENT OF MR. SAMUEL A. TAYLOR, PITTSBURGH, PA.

Mr. TAYLOR. Mr. Chairman and gentlemen, this bill before you for a hearing to-day, while it is ostensibly one with respect to the seacoast, can easily be seen by anyone, from a reading of lines 9, 10, 11, and 12 and 13, to apply to a vastly larger territory. The language is "any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable waters of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable waters."

I would like to have you consider what that means to the coal mining industry especially, which I am speaking for to-day. There is very little coal produced where the water from the mines does not reach a tributary or pass out into a tributary of a navigable stream. So far as I know, that is true all over the country, and I am pretty well conversant with the mining industry in the United States. So that means that every ton of coal that comes out of the mines is going to be charged with a charge to take care of these mine waters, unless this bill is modified.

I apprehend that few people realize how much mine water is produced in the mines as compared to the coal. In the anthracite region there is produced from 10 to 20 tons of water for every ton of coal produced. In the Pittsburgh district, with which I am very familiar, our average is 7 tons of water for every ton of coal produced. In certain other districts it varies from a little more than to a little less than that amount. This means a tremendous increase in cost in the production of coal, and if this bill should go through as it is now written it would prevent the operation of mines depositing their water in these channels.

Mr. OSBORNE. What is there in the water that comes from the mine that is deleterious?

Mr. TAYLOR. It is sulphurous. There have been a number of reports made on that. That water, of course, will kill vegetation; it will kill fish; it will kill practically any living thing, after it comes out from the mines, provided there is enough of the sulphuric acid in it.

In the early days there was so much raw water that the small amount of mine water that went into the streams did not have a serious effect. Take, for instance, our own Connellsville region, along the Youghiogheny River and a part of the Monongahela River. The water running out of the old mines could not possibly have been controlled under this bill because there is nobody there to take care of it. It has already contaminated the streams so there is nothing living in them. There are no fish in the Youghiogheny River until you get above Connellsville. The small tributaries along there are very largely in the same condition, and in the small streams, such as the creeks, where the mine water has passed out into them, there has not been a living organism in them for 20 years. It is impossible to take care of that water as it stands to-day because the people who have mined out of the old mines have gone. The figures I mentioned to you a few minutes ago do not include the old mines, but simply the mines in active operation. The water running out of those old mines is there, and I do not know who would take care of it, because the people who mined those old mines are dead and gone.

It would not be fair to put that burden upon the landowner, because it would mean bankruptcy, with the tax he is now paying.

I suggest that in line 9 on page 1 of the bill now under consideration, after the word "from" and before the word "streets," you insert the words "coal mines or operations in connection therewith." I think if that is done, so far as the coal people are concerned, they will be taken care of. That would exempt the coal mines, the same as the bill now would exempt sewage and water running from the streets to-day.

The purpose is that the coal mines of this country, which are nearly 7,000 in number, as shown by the last census, shall not have this burden placed upon them. They employ in the neighborhood of three-quarters of a million people, or very close to that, and the output at the mines was valued at a billion and a half dollars, practically. If this is added to the expense, I do not know exactly what the cost would be in the going operations, but it would be somewhere from 10 cents to 50 cents a ton, where an excessive amount of water is produced.

Outside of that, even if that were taken care of, you would not remedy the situation because there are so many old mines which have been worked out, that are not now producing this water, and there is nobody working the mines on which to put the tax burden.

Consequently, it seems to me it would be wise to amend this bill in this way, and likewise there are two or three other bills that have practically the same wording. House bill 7430, by Mr. Briggs, I think, should be amended in the same way, and another bill, which is a Senate bill, however, which you folks do not have to do with, should be amended likewise. Then there is another bill that I just received this morning, introduced by Mr. Rosenbloom, which certainly would put a quietus to a large amount of mining in this country if it were passed as it stands to-day.

Mr. MICHAELSON. To your knowledge, has any legislation ever been passed tending to restrict the flow of water from mines into navigable streams?

Mr. TAYLOR. There have been quite a number of attempts but none that I know of that has ever been passed.

Mr. MICHAELSON. Anywhere in the country?

Mr. TAYLOR. No; there have been several suits brought in connection with this, one in Pennsylvania, a noted case, and it was decided in that court—it was in the anthracite case—that the coal industry was of more value than the fishing industry, in a stream that was polluted.

Mr. CHALMERS. How about the iron mines?

Mr. TAYLOR. There is only one large iron mine that I know of in Pennsylvania, but you will find the same thing to contend with, where they have a certain amount of water which carries sulphates and copperas, that will be affected by this.

Mr. CHALMERS. But there are mines in other States, Tennessee, and Michigan, for instance.

Mr. TAYLOR. Yes; to a great extent, but they will not have to contend with this to a large extent. I can not answer very many questions on that feature because I am not familiar with the details of that as I am a coal man, but the attorney for the mining companies will have the data when it comes to that hearing. As far as I know, there is only one large iron ore mine in Pennsylvania; that is, the Cornwall. There is some water conducted from that and that would flow into a stream that goes into the Juniata.

Mr. OSBORNE. We will give this matter close attention. Representative Briggs is here and I think it will be desirable now to have an explanation made of his bill, and the difference between it and the Appleby bill, if any.

STATEMENT OF HON. CLAY STONE BRIGGS, REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS.

Mr. BRIGGS. Mr. Chairman, the bill introduced by me with reference to this matter is H. R. 7430. I have not enough time to do more than discuss briefly the merits of it. I shall not speak on matters that have probably been already discussed here in a way that is sufficiently illuminating. In the first place, I want to say there seems to be a considerable amount of confusion about some of the measures before this committee and about the existing law. In the first place, it is evident from many of the presentations before this committee that there are those appearing here who are not familiar with the existing law.

Mr. OSBORNE. I suggest that you incorporate in your remarks here section 13.

Mr. BRIGGS. That is exactly what I expect to do. The bill which I have introduced differs very slightly from the existing law so far as relates to the insertion of new material. It does make rather more specific matters which some contend are not sufficiently covered by the present law; but, according to the construction of others, the present law as it stands is sufficient. I would like to read section 13—it is not very long—for the benefit of the committee.

Mr. OSBORNE. That is the present law?

Mr. BRIGGS. That is the present law, passed in 1899, over 22 years ago, and known as the act of March 3, 1899, chapter 425. Section 13 reads as follows:

"It shall not be lawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall not be lawful to deposit, or cause, suffer, or procure to be deposited material of any kind in any place on the bank of any navigable water, or on the bank of any tributary of any navigable water, where the same shall be liable to be washed into such navigable water, either by ordinary or high tides, or by storms or floods, or otherwise, whereby navigation shall or may be impeded or obstructed: *Provided*, That nothing herein contained shall extend to, apply to, or prohibit the operations in connection with the improvement of navigable waters or construction of public works, considered necessary and proper by the United States officers supervising such improvement or public work: *And provided further*, That the Secretary of War, whenever in the judgment of the Chief of Engineers anchorage and navigation will not be injured thereby, may permit the deposit of any material above mentioned in navigable waters, within limits to be defined and under conditions to be prescribed by him, provided application is made to him prior to depositing such material; and whenever any permit is so granted the conditions thereof shall be strictly complied with, and any violation thereof shall be unlawful." (Sec. 9385 Barnes Federal Code; sec. 9918, U. S. Compiled Statutes, Ann.; Federal Statutes Ann., vol. 9, p. 58; 30 Stat. L., 1152.)

I will also read section 16, which is the penalty section. It will make the hearings complete in that respect:

"Every person and every corporation that shall violate, or that shall knowingly aid, abet, authorize, or instigate a violation of the provisions of sections 13, 14, and 15 of this act shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding $2,500 nor less than $500, or by imprisonment (in the case of a natural person) for not less than 30 days nor more than one year, or by both such fine and imprisonment, in the discretion of the court, one-half of said fine to be paid to the person or persons giving information which shall lead to conviction. And any and every master, pilot, and engineer, or person or persons acting in such capacity, respectively, on board of any boat or vessel who shall knowingly engage in towing any scow, boat, or vessel loaded with any material specified in section 13 of this act to any point or place of deposit or discharge in any harbor or navigable water elsewhere than within the limits defined and permitted by the Secretary of War, or who shall wilfully injure or destroy any work of the United States contemplated in section 14 of this act, or who shall wilfully obstruct the channel of any waterway in the manner contemplated in section 15 of this act, shall be deemed guilty of a violation of this act, and shall upon conviction be punished as hereinbefore provided in this section, and shall also have his license revoked or suspended for a term to be fixed by the judge before whom tried and convicted. And any boat, vessel, scow, raft, or other craft used or employed in violating any of the provisions of sections 13, 14, and 15 of this act shall be liable for the pecuniary penalties specified in this section, and in addition thereto for the amount of the damages done by said boat, vessel,

scow, raft, or other craft, which latter sum shall be placed to the credit of the appropriation for the improvement of the harbor or waterway in which the damage occurred, and said boat, vessel, scow, raft, or other craft may be proceeded against summarily by way of libel in any district court of the United States having jurisdiction thereof." (Sec. 9388, Barnes Federal Code.)

The bill introduced by me, Mr. Chairman, is not really an original one. It is the identical provision which was reported out of this committee in a measure which it reported to the third session of the Sixty-sixth Congress in H. R. 16022. In that measure it was reported, I think, as section 3 of the bill. The only changes in the law made in that part of the measure heretofore reported by this committee—and, as I say, it is the same as the measure introduced by me, and which I took the liberty of utilizing so as to have the bill reported favorably, if the committee saw fit to do so, in order to correct the evil which it was aimed to abate—the only changes made in the existing law are in the first line, where instead of the words, "not be lawful," the words in the bill introduced by me and in the one in the section reported by the committee previously are "be unlawful." That is one change. The other change was that before the words "any refuse matter" are inserted the words "any oil, fuel oil, oil sludge, or any other oil refuse." The additional change was the substitution again of the words "be unlawful" for "not be lawful," simply a preference in phraseology, and in the last proviso the insertion of the words "other than oil, fuel oil, oil sludge, or any other oil refuse."

It is quite apparent that the purpose, therefore, has not been to enlarge the scope of that act, certainly, beyond the use of the words oil, oil sludge, and oil refuse. The act, as it now reads, in the existing law, expressly inhibits "any refuse matter." The argument here proceeds along the line apparently as if this act was going to affect many industries adversely which have never been affected before. The statute has been on the statute books 22 years, and no concern, no business, has suffered inconvenience. No effort to repeal it has been made that I have heard of, in the least. The only differences which have arisen, as I understand, are these—that the question has obtained whether the words "any refuse matter," as now contained in the law, included oil waste. I think, this morning, Congressman Dupré indicated that the courts in his section of Louisiana were enforcing this particular provision of section 13, and placed upon the words "any refuse matter," now in this act, the construction that such language now includes oil refuse, and, therefore, such waste oil falls within the inhibition of the law. I have understood, however, that a different view has either obtained in other localities among the courts, or that the Secretary of War, perhaps, was not clearly enough advised as to whether the term is sufficiently comprehensive to include oil waste, and, therefore, the engineers who are in direct charge of the enforcement of this provision in the beginning—because the prosecution, of course, is delegated to the Department of Justice—have not in some localities taken action to abate the evil or have questioned whether or not they have any specific authority to do so. In my opinion, I am very much inclined to the opinion that under the constructions given this statute already by the Federal courts generally, and even the Supreme Court of the United States, the phrase "any refuse matter" includes oil waste. The constitutionality of this particular section has been upheld. It is upheld in the Supreme Court of the United States comparatively recently, and also upheld in the case of The Scow, 152 Federal Reporter, 548.

"Words and Phrases" define "refuse' as synonymous with "waste," and it is defined as "what is left or worthless when the rest is taken." (7 Words and Phrases, p. 6030; 8 Words and Phrases, p. 7406.) This statute is particularly aimed at refuse matter of various character, and the term used in the act is purposely broad, so as to include everything of any character which constitutes refuse. So I say I am rather inclined to that view, that the act in itself would include this evil complained of. But, as stated, there are some who do not think so. This committee apparently thought it was proper to prepare an amendment or propose an amendment for the action of Congress, so that it would furnish a specific guide in those localities where the construction placed upon the words "any refuse matter," used in the act, might be a more restricted rather than a more liberal one. Of course, I appreciate that criminal statutes are construed generally with strictness. But in the interpretation of this statute the Federal courts have seemed to prefer a construction designed to check the evil to be abated, which is dumping or discharging refuse into navigable waters of this country, and to uphold the exercise of very wide powers to correct that situation, as well as to frown down upon any attempt to limit the comprehensiveness of the term if, in truth and in fact, the article complained of is actually refuse matter. In fact, the courts specifically had before them the question of whether the tops of pilings which were sawed off and allowed to fall in the water and drift about in the harbor constituted "refuse matter" in violation of this act, and they held that it was refuse matter.

The courts further held that under the law now you can not dump the scourings of dredges in any part of the harbor unless permission has first been obtained from the United States engineers. It might be useful for some purposes, but it certainly would not be useful in choking up the harbor in a part where, perhaps, the Government was spending thousands and hundreds of thousands of dollars to deepen the same.

Of course, the Federal Government exercises this power under the commerce clause of the Constitution; and the Supreme Court of the United States has held that commerce includes navigation and gives the Government the fullest power to deal with that subject, and, therefore, to prevent any obstructions and hindrances to navigation. This act is not intended as a burden upon and has not operated as a burden upon anyone, but endeavors to prevent an evil, and only requires an honest and fair compliance with its terms and provisions. If someone drops a few shavings into the water, I do not think that anyone would contend that prosecutions would follow, even if somebody in authority saw another drop the shavings in there; and the suggestion that a prosecution might follow spilling a drop of oil accidentally overboard into a harbor or other navigable waterway, is to my mind altogether absurd and has no force whatever, because it is inconceivable that any officer would prosecute anyone for any such action as that, when it constitutes no hindrance, impediment or obstruction whatever to navigation or any menace to it. It seems to me that it is within the power of Congress to provide even more than this act now specifies, which refers to obstructing or impeding navigation; I think the words used are obstructing or impeding. I think they could very properly be extended to include the words "or in any way menacing." But such have not been inserted in my bill.

Oil is not only a nuisance by reason of its contamination of the water; it is a danger to navigation. It is a danger to the ships that ply and use those waters. It is a danger and fire hazard to docks that are constructed there at vast millions of dollars expended in investment. It is a danger to the commerce of the country, that wants to use these ports and those docks; and that is the very thing that this statute, which was enacted in 1899, sought to prevent. It was not only to prevent the dumping of material that might be dredged from one part of a harbor or other navigable water to another, but it was to remove and prevent other dangers to navigation that the act was made so comprehensive; and though, as previously indicated, I have been able to find that any appelate Federal court has passed upon the question of whether it includes oil or oil waste, yet I have heard, that Judge Foster, of the United States District Court for the District of Louisiana, at New Orleans, construes this act as being adequate to meet the oil waste evil, and that according to his view, no additional legislation is needed.

It occurs to me further, Mr. Chairman, that the only purpose, therefore, which this bill, or any of the others along similar lines, for that matter, can have is to clarify a provision which already exists in the bill in regard to refuse matter. No one disputes, as far as I have heard in this hearing, the fact that the oil-waste nuisance constitutes a very grave menace; a menace as a fire hazard to the great ports of the country, with their great terminals valued at millions of dollars, to the great commerce which flows through those ports, to the fisheries, and to the bathing beaches of the country. I am inclined to think that some of the power to regulate the situation still obtains in the States, within jurisdictional limits and within the 3-mile limit, and probably such an exercise of their police powers would not conflict with the power of the Federal Government under the commerce clause. In my own locality, where this evil has been to some extent developing more and more until certain steps have been taken to check it and bring about its abatement, it was found that the enforcement of section 13 by the Federal authorities was not given enough attention where oil waste was involved. Appeal was made to the State fish and oyster commissioner, and he required certain regulations with reference to the use by refineries of oil traps, which prevented a great deal of contamination of the water and relieved the situation a great deal, although there is still a very considerable amount of waste finding its way into the harbor and also on the beaches and into some of the connecting streams.

For this reason, therefore, I do not think that any arguments advanced here indicate any opposition to the view that some further expression in this matter is advisable to further clarify the law, even though others contend it is not necessary. I do not think that the objections which have been urged here to some other measures are tenable, have any application to my bill, because the act itself, as it stands to-day, is probably comprehensive enough to really include this evil; but to remove any question about that, so that the oil-waste nuisance may be effectually abated, I took occasion to reintroduce that portion of the committee bill reported at the last session by this committee which dealt with this situation, and see no reason why it should not again be favorably reported.

STATEMENT OF MR. W. D. BARRINGTON, REPRESENTING THE CONSOLIDATION COAL CO.

Mr. BARRINGTON. Mr. Chairman and gentlemen, I came here through the courtesy of the Consolidation Coal Co., for which I am assistant testing engineer, and we operate in the bituminous coal fields of Pennsylvania, Maryland, West Virginia, and Kentucky. We have about 100 mines in which we operate, which require the handling of enormous quantities of those acidulous waters and also alkaline waters. There is a bill that Mr. Rosenbloom has introduced which will necessitate the handling of all this acidulous water and making it neutral before entering any navigable stream. To do this, gentlemen, is a big job, and it is one to which the committee should give serious consideration. We have, possibly, in one coal mine 8 or 10 outlets for the water to come from one of those mines. Our system at present is to avail ourselves of the natural drainage from the mines, to cut down our cost of coal. If this proposition goes through we will have to coagulate all this water going to these various outlets and dump it or direct it to one point at which the water will have to be treated. The method to handle this transfer gives very little consideration to the cost, the terrific costs of the change in our mining methods to handle this water, which involves a considerable investment and undoubtedly jeopardizes the coal industry of our country.

I came here not to talk to you on the subject but primarily to answer any questions you would like to ask as to technical matters, about the chemical constituents as found in our mine drainage. If you have any questions to ask I will be glad to try to answer them.

Mr. MICHAELSON. Mr. Chairman, may I ask the gentleman this question: You do not mean to say that it would stop mining coal if you were compelled to neutralize these acidulous waters that come through the mines, do you?

Mr. BARRINGTON. No, sir; I did not say that.

Mr. MICHAELSON. What percentage would that add to the cost of a ton of coal, if you were compelled to do that?

Mr. BARRINGTON. I do not believe you could find those figures at any place; I do not believe any one has those figures to submit to you, because, really, I do not know how much water you would have to handle by this process.

Mr. MICHAELSON. What process would you have to let that water through?

Mr. BARRINGTON. If you just want to neutralize the acidulous water, you would have to alkalinize it; in other words, you would have to neutralize the gas that was in some water by some alkali.

Mr. MICHAELSON. Would that be a great expense to the mine owner?

Mr. BARRINGTON. It would be, from many standpoints; especially because you would have to handle the water from one central point; we would have the water running out of several different points, miles away from each other, and we would either have to establish a machine at each opening, or else you would have to pump it to one central place to take care of it.

Mr. MICHAELSON. Are you aware that the Drainage District of Chicago, for instance, is spending millions and millions of dollars to purify the water, because of the fact that waste material is being dumped into the Chicago River and into the canal that takes it down into the Illinois River?

Mr. BARRINGTON. I have read articles on that, yes, sir.

Mr. MICHAELSON. Do you not think that if the community spends that money to do that kind of thing for people that might be affected, a private corporation ought to feel in duty bound to do just as much?

Mr. BARRINGTON. We absolutely would cooperate in every way possible.

Mr. MICHAELSON. You would not consider it a hardship, then, if legislation were passed compelling you to neutralize water from the mine which otherwise would poison navigable streams and drive all living things away from them?

Mr. BARRINGTON. We would conserve and help in every way possible; but the question is, how much the mine drainage does pollute the streams? Personally, I do not think it does very much.

Mr. MICHAELSON. It has been said by your colleague here that there is not a living thing in the Allegheny River below a certain point; that all life has been destroyed because of the condition of the water coming from the mines.

Mr. BARRINGTON. I do not know what his information is, or his opinion. I can state to you that my personal idea in the matter is this: We have acidulous water coming from the mines; but if there is free sulphuric acid which comes from the waters from the mines in the river, which is doubtful, that sulphuric acid will freely react with any alkaline that may be in suspension in the water, like clay, or any carbonates that happen to be there, and it will be neutralized there; because we have mine drainage that is free sulphuric acid in going into the river, and after it has been

in the river, we can take samples of the water all the way down, below inlets from the different creeks, and we can not find free sulphuric acid there.

Mr. MICHAELSON. But still you do admit that the water from these mines is poisoning the streams so that no living creature can exist there?

Mr. BARRINGTON. Absolutely, it is acidulous; I do not admit it is poisonous, because we have no data on that matter; but I admit it is acidulous.

Mr. MICHAELSON. If it is dangerous to plant life and animal life, it would be dangerous to human beings also, would it not, if taken in quantities sufficient?

Mr. BARRINGTON. I am not in a position to answer that question.

Mr. MICHAELSON. That is all.

Mr. OSBORNE. The waters below there are not used at all for domestic purposes, are they?

Mr. BARRINGTON. Yes, sir; we have numerous mine drainages where the water is going into the river; there is the town of Fairmount City, where I live; we have a number of mines on the West Fork River, and also on the Clarion River; and those rivers join the Allegheny River, and Fairmount City gets its water from them—I will have to change that statement, because Fairmount City gets water from the Clarion Valley River; but there is water there that is affected by mine drainage.

Mr. OSBORNE. You drink the water, do you?

Mr. BARRINGTON. Yes, sir, we drink it.

Mr. OSBORNE. But it is treated, is it not?

Mr. BARRINGTON. There is no treating of the water, except the chlorination of it, from a bacteriological standpoint; we introduce liquid chlorine into the Fairmount City water supply in order to kill the injurious bacteria; but in so far as neutralizing the acidity, or taking care of the acid in the water is concerned, there is nothing being done.

Representative BRIGGS. Mr. Chairman, may I have permission to have incorporated into the record a brief of the Galveston Commercial Association, of Galveston, Tex., with regard to this proposed legislation?

Mr. OSBORNE. Yes; that may be incorporated.

(The material submitted by Representative Briggs is as follows:)

BRIEF OF GALVESTON COMMERCIAL ASSOCIATION.

For more than two years the Galveston Commercial Association has been engaged in an active study of the increasing amount of refuse oil being cast on our inland waters and in the Gulf, and as a result has found three sources from which the supply of waste oil is augmented.

These are:

1. Through the discharge of water ballast from vessels entering port to take cargo and the occasional cleaning of tanks and pumping out of bilges of oil burning vessels.

2. Wastage from faulty connections between loading or discharging tankers and their shore lines.

3. Wastage from producing fields and refineries when no basins are fixed for catching the waste oil, it being allowed to run into the rivers and thence to the bays.

There are other means whereby the supply is increased from time to time, but the foregoing are principally responsible for conditions existing here.

Contrary to general belief we find that the first-named source is the lesser of the three evils. We have few export oil tankers plying out of this port, our great movement being inbound. The companies exercise precautions against the discharge and pumping out of bilges. In addition the discharge or pumping process within the harbor limits is controlled by the municipal government and enforced rigidly by the fire marshal. However, some steps should be taken to prevent discharges on the high seas as well for the oil floats until it hits some body of land and immediately becomes a menace.

Wastage from faulty connections is a large item in almost any port having a considerable oil movement. Few of the companies have their outlet or intake pipes equipped with stop valves. Consequently when the connection is broken from three to five barrels and often much more are allowed to run into the water. This is cut to a minimum when the hose man is quick and efficient, but such is not often the case. Accidents such as leaky connections or leaking tanks aboard ship also contribute their share to the menace.

In Galveston and in this district the third problem has caused the greatest difficulty as two of the largest oil fields in the State are located on rivers tributary to our waters. Waste oil was often allowed to run into the water and was promptly thrown up by favorable currents on our beach or in the bay. We at first asked the Engineering Department to investigate and try to conceive some relief but their report was to the

effect that they had no jurisdiction. We then took the matter up with the game fish and oyster commissioners for the State with better results. The companies were forced to build catch basins and the result is that this nuisance has been considerably abated.

The proper manner of disposing of this waste oil is a matter which has been experimented with in a large number of places. In some cities the authorities provide barges which transport the waste to some selected spot where it is burned and this seems to be the most approved method.

The matter is one that can only be handled by the Federal Government, as the restrictions should extend even beyond the 3-mile limit if possible. In the matter of boundary rivers—that is, where oil fields are located on boundary rivers—State authorities would no doubt clash and in many instances find themselves without proper jurisdiction. Enforcement should be left to some governmental agency with facilities to make investigations and prosecute offenders, such as the engineering department.

The matter is a serious one to Galveston. Several millions of dollars are invested in our resort facilities which would be absolutely lost if our surf bathing is ruined through oil pollution. Bath houses report hundreds of dollars have been lost during the past year through the nuisance, the damage being chiefly confined to suits and towels. The increase in the fire hazard to ships and docks is tremendous. Several large fires have been attributed to floating oil in recent months, and unless vigorous steps are taken will materially affect insurance rates on ships, cargo, and waterside property.

This association has knowledge of many instances of carelessness or wilful negligence with respect to the discharge of oil which could be readily remedied through congressional action as above outlined and proper enforcement of same.

The above statements are based on two years' active investigation of conditions on the Texas coast, as is borne out by a considerable volume of correspondence on file in this office.

GALVESTON COMMERCIAL ASSOCIATION,
I. D. MCMASTER, *Secretary*.

STATEMENT OF MR. W. H. KILLIAN, BALTIMORE, MD., REPRESENTING OYSTER GROWERS' AND DEALERS' ASSOCIATION OF NORTH AMERICA.

Mr. KILLIAN. Mr. Chairman and gentlemen, I represent the Oyster Growers' and Dealers' Association of North America. We are glad of an opportunity to voice our opinion on this very serious question.

We do not want to be viewed as being too charitably inclined to these other interests to speak of their costs, the costs that would be involved in remedying the conditions brought about by waste; because we have been the "under dog" for a good, long time. We have not had any opportunity at all for protection.

As to whether this bill of Congressman Appleby would correct all of our evils, I am not prepared to say. We do believe, however, that whatever regulation is introduced should be far-reaching enough to include all wastes, and we do not in any wise feel that the least of them is oil.

We want to impress on you, however, this fact; that oysters—and I may say all the other fish and shellfish—contribute a tremendous amount of food to the country; they have in the past contributed vastly more than they do at this time. They have been decreasing annually, we feel, largely because of the presence in the waters of some deleterious matter that destroys the spawn. The spawn of fish and oysters is very numerous; they are very prolific.

When I say that perhaps 10 years ago the jobbers and the retailers of oysters were able to purchase at this time of the year a gallon of oysters for a dollar, and that to-day they pay $2.25, you can see that the costs imposed upon the American public are a tremendous item, just on that one item of food.

Oysters are produced without much of the cost of cultivation and fertilization of our land crops, and it is one of the things that are seasonal. It is one of the items of food that mean considerable to the people of this country. And we feel that too much weight should not be given by the committee to the request made on the part of interests here as to the cost involved in remedying these things, because, as I have said in the instance of the present cost of oysters to the consumer, as compared with 10 years ago, there is a tremendous tax imposed on the consumer of food, and the additional cost that might be imposed upon the interests who have spoken here to-day by the handling of these wastes would only be a small matter as compared with the cost that the consumer is now bearing in this matter of food.

We hope that you will have consideration for the fact that, annually, there is an apparent lessening of production of a valuable food.

Mr. MICHAELSON. May I ask the gentleman if, in his opinion, the increased cost of oysters is due to the costs of production, or other causes—war prices, and so on?

Mr. KILLIAN. I could answer that by saying that undoubtedly during the period of the war the increase was largely due to causes of many kinds.

Mr. MICHAELSON. Those costs have decreased since then, have they?

Mr. KILLIAN. Those costs have materially decreased.

Mr. MICHAELSON. Have the prices of oysters come down?

Mr. KILLIAN. The prices of oysters have not come down. The prices of oysters are higher this year and last year than during the war period.

Mr. MICHAELSON. Is there profiteering going on?

Mr. KILLIAN. Nobody is able to discover it in their pockets at the close of the season.

Mr. OSBORNE. What is the reason of that?

Mr. KILLIAN. The reason for that is the gradual lessening of the supplies each year. Mr. Wheeler will follow me; and I wish you would allow him to explain that. He is engaged in the production of oysters from the seed up; and has followed that thing very closely, and he could give you a little more information than I could on the subject. Of course, a factor in the cost of oysters to-day is the increase in freight rates and express rates, which are considerably higher than a year ago.

Mr. MICHAELSON. I know the freight rates are considerably higher, and I was wondering whether those costs have decreased any?

Mr. KILLIAN. No; the costs are higher.

Mr. MICHAELSON. Since the additions were made a few years ago?

Mr. KILLIAN. The costs that are high as compared with last year are the railroad rates. But the labor costs involved in preparing the oysters for market, and the packing costs and other operation costs have decreased the past year.

Mr. BRENNAN. Mr. Chairman, I would like to ask at this time if any suggestion has been made that this evil exists on the Great Lakes, or that Mr. Appleby, or any of the other proponents of this legislation believe it should apply to the Great Lakes?

Mr. APPLEBY. Answering that question, Mr. Chairman, I would say that the prime object of introducing the bill was for the Atlantic seaboard; my knowledge of the conditions on the Great Lakes is not sufficient to answer as to whether it should apply there. There have been some good points raised here that it should not apply there. As to the leakage of the oil in the ordinary running of machinery, it certainly was not the intention of the bill to apply minor matters of that sort.

Mr. CHALMERS. I would like to state for the benefit of Representative Brennan, who was out of the room when we discussed the Great Lakes proposition, that it is my opinion that if this bill does not except the shipping operations on the Great Lakes, an amendment would be introduced that would protect the Great Lake shipping from the natural operations of their lines of boats. We were assured that there were no oil burners on the Great Lakes, and in a general way, it does not apply to the Lakes. But I think some of us, perhaps, will prepare an amendment and introduce it that will protect the Great Lakes shipping in the natural operation of their boats.

Mr. BRIGGS. May I suggest this? Of course, Mr. Appleby's bill, as well as the bill introduced by myself, and Mr. Bland's bill, and the bill of Congressman Edmonds, I think, that is pending in another committee, very largely reenact sections, or portions of sections, of the existing river and harbor act, which deals with the question I discussed a moment ago, relating to all refuse matter. The bill of Mr. Appleby, however, changes the present penalty, and probably makes other changes. The bills of Mr. Bland and Mr. Edmonds also change the law respecting sewage.

I have no idea if the committee makes a report, what recommendation it will make. But if the committee should choose to exempt the Great Lakes from the operation of such legislation, it would have to be extremely careful that it did not exempt them from the operation as to any refuse matter, because that might make that great body of water open to contamination of every kind, and not only to contamination, but to interference, or impediment or obstruction of navigation, through sundry obstructions which the War Department has now authority to abate.

Mr. OSBORNE. Allow me to suggest that the details of framing a bill should be considered later; and we are met to-day for the purpose of hearing testimony as to the facts; and I think we had better hear some of these gentlemen, who probably want to catch a train this afternoon.

Mr. BRIGGS. The only purpose I had in asking the question was to call upon the authors of the bill for their views.

Mr. CHALMERS. I just want to say that I do not think any amendment will except any particular section of the country or any particular body of water; but there might be a provision which, while preventing these injuries to the stream, would prevent the bill from unduly interfering with certain operations.

Mr. OSBORNE. We will now hear Mr. Wheeler.

STATEMENT OF MR. CHARLES WHEELER, STRATFORD, CONN., REPRESENTING CONNECTICUT OYSTER GROWERS' ASSOCIATION.

Mr. WHEELER. Mr. Chairman, I represent the Connecticut Oyster Growers' Association. They have asked me to come here and say to your committee that their industry is practically on its last legs because of pollution, and that oil is one of the large contributing factors of that pollution.

In 1908 oysters ranked first in value among all the fish products of the United States, with a total product of over 30,000.000 bushels, valued at $15,700,000, or 29 per cent of the value of all fish products of the United States.

The greatest production was from the beds in Long Island Sound. Of this production Connecticut ranked first. Connecticut's output for that year sold for $2,583,000. Connecticut's beds produced 47 per cent of the total seed oyster product. Cultivation of this product enhanced the value so that the Connecticut product brought an average of 83 cents per bushel, as against 36½ cents per bushel for Southern stock.

In 1880 our total output represented less than 2 per cent of the total product of the United States. In 1908 that product was increased to 12½ per cent of the nation's total. In 1920 our production fell off again to 2 per cent of the nation's total.

Originally every river and stream that empties into Long Island Sound was a natural spawning bed for shellfish and finny fish. To-day 75 per cent of those natural spawning areas are so grossly polluted that neither shellfish nor finny fish will live therein. Those areas were visited within my recollection—and I am a young man—yearly by thousands and thousands of migratory fish for the express purpose of delivering their spawn. I have seen the spawn of smelts so thickly deposited on the bottom of the Saugatuck River that it looked like a yellow bottom all over the river. To-day there are very, very few smelt on the Saugatuck River.

Mr. CHALMERS. How deep was that?

Mr. WHEELER. In 2½ or 3 feet of water, right at the very top of the tidewater, where the Aspetuck River empties into it I have seen that same body of water at certain seasons of the year literally covered with frost fish depositing their spawn. Those things are ancient history. A condition exists in Connecticut which constitutes a menace to the health of our citizens, and which causes an economic loss of millions of dollars every year.

Mr. CHALMERS. Before passing that subject, Mr. Wheeler, may I ask you if, in your judgment as an expert, you do not think that the starfish interferes with the growth of the oyster almost as much as the oil?

Mr. WHEELER. No, sir.

Mr. CHALMERS. You know that the starfish is an enemy of the oyster, do you not?

Mr. WHEELER. Yes, sir. We have always had the starfish with us; we had him long before the introduction of this pollution. We had the starfish in enormous quantities in 1908, when we were at the top of our production. We were fighting stars so that one steamboat would bring in a matter of tons per day. But we can fight those stars; we can fight them successfully. But, gentlemen, we can not fight this unseen enemy that destroys the egg, destroys the little oyster, and the food that pure water carries to feed our oysters. That is the thing we are up against. Running the oyster business to-day without being able to get these sets or catches of spawn is a good deal like running a poultry farm without getting any eggs; that is what we are up against.

The effects of this condition are many, among which are the numerous cases of poisoning of people, several cases of death to live stock, and wild fowl, wild ducks, etc.; the almost total depletion of many of our natural food resources; a tremendous waste of valuable materials; damage to and reduction in the value of property, and a constantly increasing fire menace to water front and floating properties.

The oyster industry of Connecticut is at a very low ebb, because of this pollution of water. Lands that were once valuable and highly productive have been sold at a price predicated on the few remaining oysters that the ground happened to hold, and the grounds themselves have no value whatever.

The State shellfish commission this year, knowing the nonproductiveness of these formerly very productive grounds, voluntarily reduced the assessed valuation on these grounds—reduced the valuation 25 per cent on all grounds that were valued at $25 per acre or more. And the State shellfish board of relief went further; with a full knowledge of the facts, and after several hearings, they reduced the values on these oyster grounds, on all oyster grounds where application was made for relief, to a common basis of $5 per acre, on basis that these grounds once having lost their ability to produce oysters lost their value.

So that to-day oyster lands that were once assessed at $1,000 per acre are assessed at $5 per acre, or on a common level with the commonest kind of nonproductive mud bottoms.

Mr. CHALMERS. What is the State rental there on your oyster lands?

Mr. WHEELER. It is not a case of rental; we hold franchises; we bought these grounds from the State; we own them.

Mr. CHALMERS. Does the State own any grounds?

Mr. WHEELER. The State still owns some grounds, which are known as natural growth grounds, upon which any citizen may work by paying a small license fee. But the planters own their own lands, and their grounds are assessed the same as your upland ground.

Mr. OSBORNE. You are referring to assessed valuation, are you not, Mr. Chalmers?

Mr. CHALMERS. No; I am not.

Mr. OSBORNE. That is what Mr. Wheeler is referring to.

Mr. CHALMERS. I know that New York State has oyster beds on Long Island which have an annual rental of $2 an acre.

Mr. WHEELER. This reduction of assessed valuation, or, in other words, reduction of our taxes, will not save our industry. The panacea that is needed in our case is the elimination of pollution from these rivers and harbors.

And my errand here to-day is to try to impress upon you gentlemen the necessity of some legislation which will tend to the elimination of this pollution, because the very areas that are most important in the production of our fish and our shellfish are to-day the most grossly polluted. While an oyster will live in the middle of Long Island Sound, he will not thrive there, because of the depth of the water, the colder temperature of the water, and the scarcity of food properties in the water.

Nature originally planned that these oysters should be located at the mouths of these fresh-water rivers; and looking back over a period of years, there are men here, no doubt, who can recall that in every instance where a fresh water river empties into some salt water bay or sound, right where the fresh water and the salt water mingle, having a certain degree of salinity, the oysters are most prolific, as well as the clam and other forms of shellfish; and then you also find there the spawn of the migratory fish. They do not go into mid-ocean or to cold, deep areas, to deliver their spawn; they follow along the shores; they follow the various harbors and mouths of rivers, and work their way up into fresh water to deliver their spawn. Fish will go a considerable distance in order to reach their spawning bed.

One of the things this committee should bear in mind is the importance of keeping those spawning beds, or those areas, in a condition to receive the spawn when those fish go there to deliver them. When one stops to consider that a fish or a shellfish delivers millions of eggs, one can imagine the economic value that spawn will have if it is protected and allowed to mature.

So that what we want, gentlemen, and what we have got to have, or else we will go out of business, is some sort of legislation that will protect us from this ever-increasing pollution of water, and permit us to establish spawning beds in the areas where nature originally planned that they should be established, and to maintain them.

Mr. CHALMERS. Let me ask the gentleman this question: If a drastic law such as you want to pass should be passed now by this Congress, how long before your interests would be protected by such a law?

Mr. WHEELER. Let me say in answer to that that my personal observation this year has been this: That the manufacturing plants of the State of Connecticut have been operating but feebly, a total of about 25 per cent of them on an average, being efficient. The result of that is that the condition of the water in the streams of the State of Connecticut has been so wonderfully improved that bluefish, herring, mullet, and other varieties of migratory fish have been seen in rivers many miles above any area where they have been known to be for the past 10 years. And that simply proves that immediately the condition of the water is improved, the fish sense that better condition and immediately go into those areas to deliver their spawn and find their food.

I might also say that this better condition of the water is apparent by the fact that certain areas have developed tremendous sets of soft clams, of mussels, far above the areas where they have been set for the past 8 or 10 years. Right in Bridgeport harbor, snapper bluefish, the small species of bluefish, have been caught where they have not been known before for 10 years.

Mr. CHALMERS. You have not answered my question about the oyster industry.

Mr. WHEELER. I thought perhaps what I said would answer your question; but I will say further that the quicker you eliminate this pollution and permit the natural water to flood over these oyster beds, the quicker will these oysters reinstate themselves.

Mr. NEWTON. Does this pollution leave a sediment on the bottom?

Mr. WHEELER. In a great many instances it does.

Mr. NEWTON. Your shellfish, or the spawn, are on the bottom, are they not?

Mr. WHEELER. Yes, sir.

Mr. NEWTON. And the oil is on the top, is it not? Does it permeate through the water?

Mr. WHEELER. Under certain conditions, I understand that a partial evaporation takes place, and then there are certain quantities of the oil which find their way to the bottom.

Mr. NEWTON. The oyster bed is not a mud bottom; it is more or less of a shell bottom, is it not?

Mr. WHEELER. Yes, sir.

Mr. NEWTON. Does this sediment which you say is on the bottom impair those oyster beds for an indefinite time?

Mr. WHEELER. Probably it does, because we have not had a set for probably a number of years. But, gentlemen, do not take my statement to mean that oil pollution is entirely at fault. A great many of our troubles can be traced to oil pollution. One instance I will cite, in Black Rock Harbor, which history shows was a wonderful area for oysters, a natural spawning bed; but it was non-productive for a term of years.

After I conceived the plan of establishing spawning beds, I got permission from our company to establish a spawning bed in Black Rock harbor, with the idea that when those oysters delivered their spawn and liberated their spawn, the currents would carry them over to certain areas which I prepared for receiving that spawn.

The result of that experiment was this: I planted 1,000 bushels of clean, hand picked oysters, fine, healthy stock, in the month of June. In the month of September, I took our directors and a few of our friends out to show them our beautiful spawning ground, and every oyster on there was dead. And the dredges that came up there were full of a sediment of the most beautiful and iridescent colors; and that material had floated out all over that area, giving evidence of the presence of oil. And less than half a mile north of this area I located the cause, consisting of oil tanks and oil docks, where there were large receipts of oil; and there were manufacturing interests there.

The problem is this, gentlemen: that you can not have fish if you do not get young fish; you can not have oysters if you do not get young oysters. We are about out of oysters in Long Island Sound. The oysters that we are marketing to-day are seven or eight years old. Now, we can stay in while another hand or two is being dealt, if there is some hope in the future for us.

Mr. CHALMERS. Well, I tried to bring that point out, that you can not get relief in less than four years anyway, because you do not harvest oysters less than four years old, do you?

Mr. WHEELER. Well, we do not market the oysters; but we begin transplanting oysters within a few months after they are settled.

Mr. CHALMERS. If this should be reasonably cut off, do you think it could be expected that, say within a year, you could receive the spawn and propagate the oysters, or do you think the sediment already left there would pollute the beds for some time to come?

Mr. WHEELER. Gentlemen, I believe that if all pollution were automatically stopped within a given time, we could take out our dredging paraphernalia and go right to any one of these beds within a very short time, clear up this sediment and set it adrift, so that it will be eliminated from that particular section, and that we could plant oysters there so that they will thrive and do well and deliver a healthy spawn, provided they are fed by a healthy flow of water carrying proper food properties throughout the period.

Here is an interesting fact that might have a bearing on this question: The United States Bureau of Fisheries and United States Bureau of Chemistry have made a very careful study of the situation for the past five years in Long Island Sound. At my suggestion, Dr. E. P. Churchhill, at that time connected with the Bureau of Fisheries, made a little experiment, which was this: I took 15 different samples of water from 15 different locations in Bridgeport harbor, and on the other hand, Dr. Churchhill, by the aid of his nets and other paraphernalia, secured a quantity of lively oyster larvæ down off the Millford shore. Dr. Churchhill suggested that these live swimming oyster larvæ be put in each one of these samples of water that we furnished him, and in every instance the oyster larvæ died. The one that lived the longest lived 240 seconds; the one that lived the shortest time died in 10 seconds. All of which proves that what we claim for pollution is true.

Mr. MICHAELSON. Was this oil-polluted water or pollution from other causes?

Mr. WHEELER. We did not make an analysis of the content of the water.

Mr. MICHAELSON. From what is going on in that particular neighborhood, what would you say was the cause?

Mr. WHEELER. There are all classes of manufacturing going on in Bridgeport; there are the natural affluents coming from the sewers; there are brass shop refuse, oil refuse, etc., all of which are contributing factors in this gross state of pollution.

Mr. OSBORNE. Have you submitted all you care to?
Mr. WHEELER. Yes, sir; thank you very much.
Mr. OSBORNE. You have been so interesting that we have not limited your time. We will now hear Mr. Tierney

STATEMENT OF MR. J. I. TIERNEY, SECRETARY OF THE MANUFACTURING CHEMISTS ASSOCIATION OF THE UNITED STATES, WASHINGTON, D. C.

Mr. TIERNEY. Mr. Chairman, I should like to leave a list of our members for the record.
(The list referred to is as follows:)

MANUFACTURING CHEMISTS' ASSOCIATION OF THE UNITED STATES.

OFFICERS.

President: Dr. Chas. L. Reese, E. I. duPont de Nemours & Co., Wilmington, Del.
Vice presidents: H. H. S. Handy, Semet-Solway Co., Syracuse, N. Y.; C. Wilbur Miller, Davison Chemical Co., Garrett Building, Baltimore, Md.
Treasurer: S. W. Wilder, Merrimac Chemical Co., 148 State Street, Boston, Mass.
Secretary: John I. Tierney, 540 Woodward Building, Washington, D. C.
Executive committee: Henry Howard (chairman), Grasselli Chemical Co., 1300 Guardian Building, Cleveland, Ohio; Adolph G. Rosengarten, Powers-Weightman-Rosengarten Co., Ninth and Parrish Streets, Philadelphia, Pa.; Lancaster Morgan, General Chemical Co., 25 Broad Street, New York City; C. Wilbur Miller, Davison Chemical Co., Garrett Building, Baltimore, Md.; D. W. Jayne, The Barrett Co., 40 Rector Street, New York City; H. H. Dow, The Dow Chemical Co., Midland, Mich.; E. L. Pierce, Solvay Process Co., Syracuse, N. Y.

MEMBERS.

Armour Fertilizer Works, 209 West Jackson Boulevard, Chicago, Ill.
Atlas Powder Co., Wilmington, Del.
The Barrett Co., 40 Rector Street, New York City.
Baugh & Sons Co., 20 South Delaware Avenue, Philadelphia, Pa.
Bower, Henry Chemical Manufacturing Co., Grays Ferry Road and Twenty-ninth Street, Philadelphia, Pa.
Calco Chemical Co., Bound Brook, N. J.
Carbide & Carbon Chemical (Corp.), 30 East Forty second Street, New York City.
B. P. Clapp Ammonia Co., Providence, R. I.
Columbia Chemical Co., Barberton, Ohio.
Consolidated Color & Chemical Co., 122 Hudson Street, New York City.
Contact Process Co., P. O. box 98, Buffalo, N. Y.
Davison Chemical Co., 1101 Garrett Building, Baltimore, Md.
Detroit Chemical Works, Detroit, Mich.
Diamond Alkali Co., Pittsburgh, Pa.
Dow Chemical (The), Midland, Mich.
E. I. du Pont de Nemours & Co., Du Pont Building, Wilmington, Del.
Durex Chemical Co., 320 Fifth Avenue, New York City.
General Chemical Co., 25 Broad Street, New York City.
Grasselli Chemical Co., 1300 Guardian Building, Cleveland, Ohio.
Harshaw, Fuller & Goodwin Co., 720 Electric Building, Cleveland, Ohio.
Herf & Frerichs Chemical Co., 928 Pierce Building, St. Louis, Mo.
Heller & Merz Co., Hamburg Place, Newark, N. J.
Hercules Powder Co., Wilmington, Del.
Heyden Chemical Works, 135 William Street, New York City.
Hooker Electro Chemical Co., 25 Pine Street, New York City.
Hord Color Products Co., 1636 Columbus Avenue, Sandusky, Ohio.
Klipstein, E. C. & Sons Co., 644 Greenwich Street, New York City.
Kalbfleisch Corporation (The), 31 Union Square West, New York City.
Lennig, Chas. & Co. (Inc.), 112 South Front Street, Philadelphia, Pa.
Mallinckrodt Chemical Works, 3600 North Second Street, St. Louis, Mo.
Mathieson Alkali Works (The), 25 West Forty-third Street, New York City.
McKesson & Robbins (Inc.), 91 Fulton Street, New York City.
Merck & Co., 45 Park Place, New York City.
Merrimac Chemical Co., 148 State Street, Boston, Mass.

Michigan Alkali Co., Ford Building, Detroit, Mich.
Michigan Ammonia Works, Detroit, Mich.
Mutual Chemical Co. of America, 55 John Street, New York City.
National Ammonia Co. (The), Frankford, Philadelphia, Pa.
National Aniline & Chemical Co., 21 Burling Slip, New York City.
National Lead Co., 129 York Street, Brooklyn, N. Y.
Naugatuck Chemical Co. (The), Naugatuck, Conn.
New England Fuel & Transportation Co., 111 Devonshire Street, Boston, Mass.
Newport Chemical Works (Inc.), 120 Broadway, New York City.
New York Quinine & Chemical Co., 135 William Street, New York City.
Niagara Alkali Co., Niagara Falls, N. Y.
Nichols Copper Co., 25 Broad Street, New York City.
Pennsylvania Salt Manufacturing Co., Widener Building, Philadelphia, Pa.
Charles Pfizer & Co. (Inc.), 81 Maiden Lane, New York City.
Philadelphia Quartz Co., 121 South Third Street, Philadelphia, Pa.
Powers-Weightman-Rosengarten Co., Ninth and Parrish Streets, Philadelphia, Pa.
Rhodia Chemical Co., New Brunswick, N. J.
Roessler & Hasslacher Chemical Co., 709–717 Sixth Avenue, New York City.
Rohm & Hass Co., 40 North Front Street, Philadelphia, Pa.
Rollin Chemical Co. (Inc.), Charleston, W. Va.
Semet-Solvay Co., Syracuse, N. Y.
Solvay Process Co., Syracuse, N. Y.
Tartar Chemical Works, 135 William Street, New York City.
United States Industrial Alcohol Co., 27 William Street, New York City.

Mr. TIERNEY. Our association includes about 90 per cent of the manufacturing chemists of the country and our production is about 95 per cent of the total output of heavy chemicals.

After listening all day to the testimony, it seems to me that the one constructive suggestion that should appeal to you gentlemen was that made by Dr. Manning this morning that there should be a complete investigation before legislation is attempted. This question is as broad as all industry; it embraces not only the industrial, but the economic and the social life of the country. So I think that in order to get out a measure that is scientific, that will do justice to all interests and injustice to none, and visit hardships as little as possible on those that will be affected, there should be some kind of an inquiry made, perhaps by the Department of Commerce, to ascertain those facts that have a bearing on this question; and have the results of that inquiry submitted to your committee. Then you will be in a position to judge. Without that information, I think that you will inevitably be doing injury to many interests and injustice will occur.

No one could listen to the recital of difficulties presented to your committee to-day by the representatives from the bathing resorts and the coast communities without according the fullest sympathy to them. Our industry certainly does not want to take the position of opposing remedial measures; of opposing measures for their relief or measures that will bring about improvement in conditions.

So far as we are concerned, perhaps the bill introduced by Mr. Briggs would not affect our interests. As I read his measure, it has a qualifying clause to the effect that those discharges to which objection is made, are inhibited, provided they may or shall obstruct navigation.

Now, in the chemical industry, the waste that is discharged consists of very weak solutions of acid or alkaline solutions, because the success of a chemical manufacturing plant depends upon the completeness of its recoveries in every process. As one of our members has said, "We first analyze the discard, because there is where the profits are." The waste discharged from our plants, we maintain, will do no damage or will not in any way obstruct or impede navigation.

Mr. MICHAELSON. But it may poison the waters—the stream.

Mr. TIERNEY. Well, that is something that ought to be determined by scientific inquiry.

Mr. MICHAELSON. Well, the last testimony here would lead one to believe that that was the case.

Mr. TIERNEY. Well, I shall not attempt to assess the blame or the casue for the mortality among the gentleman's oysters. But from the only direct testimony that he has submitted to you, it comes from oil. He has not given you any instances, or any evidence coming under his personal observation, where the beds were ruined or the oysters killed by reason of pollution from any other source than oil. I think I listened pretty carefully to his testimony and that is the impression I got.

There is another thought that occurs to me: In some of these bills it is provided that regulation shall be in the War Department. I think by all means if a bill is

to be passed delegating to any department authority to make regulations, it should be in the Department of Commerce. The Department of Commerce, I understand, if your departmental reorganization bill goes through, will take over such functions now exercised by the War Department as pertain to navigation of streams and harbors. It seems to me that the Department of Commerce is properly the place where a measure of this kind should be administered.

Of course, the ideal thing would be if, after this investigation that I have suggested was made, a bill could be drawn up in which Congress itself would lay down specifically the rules, and thus let business escape from bureau government. One of the arguments, you will remember, that was urged very successfully by one of the parties a year ago was, "More business in Government, and less government in business." And if we could have a Government of laws, rather than a Government of bureaus, it would materially help our business.

Understand, we are not opposing a proper, well-considered measure for correction of these evils. But we do plead with you to give careful thought to the suggestion that the Department of Commerce be directed to make an investigation; have it made scientifically, so that exact, precise, accurate facts will be presented for your consideration.

Mr. MICHAELSON. Mr. Chairman, I just want to ask the gentleman a question—or a series of questions:

Being a manufacturing chemist, you know of your own knowledge, do you not, whether a dischare from a plant is of a poisonous nature, and whether it would sustain life or it would not—the chemical properties of that particular substance? You know, do you not, whether it would or would not sustain life?

Mr. TIERNEY. In the first place, let me correct you. I am not a manufacturer; I am secretary of the association.

Mr. MICHAELSON. Well, but you are allied with chemists.

Mr. TIERNEY. Yes, but——

Mr. MICHAELSON (interposing). And any one who was a chemist would know, would he not?

Mr. TIERNEY. Why, the waste that escapes, or the discharge that escapes from manufacturing plants is the weakest solution——

Mr. MICHAELSON (interposing). I know; but just answer my question if you please, as to whether you know whether that would be poisonous or not, that comes from that plant, or would sustain life? You would know that, would you not?

Mr. TIERNEY. Well, I would rather have it determined by an expert chemist, after a thorough examination and perhaps test.

Mr. MICHAELSON. Well, any boy who had studied chemistry for one year could ascertain whether a substance would sustain life.

Mr. TIERNEY. Well, if you ask if a high degree of sulphuric acid is poisonous to animal life, I would say, yes, of course.

Mr. MICHAELSON. I am not asking you about a high degree, but I am asking you about——

Mr. TIERNEY (interposing). Oh, these spent liquors are very low in acidity, and they are diluted by water.

Mr. MICHAELSON. But do they impair animal or vegetable life?

Mr. TIERNEY. Probably to some extent; yes.

Mr. MICHAELSON. All right. Now, if an industry is injecting that kind of refuse into a navigable stream, does it not seem to you to be right and justice to others who may depend upon that stream for a livelihood that they should counteract that evil by a neutralizing process; and would it not be just as easy for a chemist to evolve a neutralizing process as it would be to manufacture the article which he is selling from that particular plant?

Mr. TIERNEY. Well, I would like to submit to you that the laboratories of every chemical plant in the country are engaged on that problem all the whole time. And the profits of the institutions depend largely upon the results of the work in the laboratory, and the success with which the chemist does recover properties in the spent liquors; they are working on that all the time.

Mr. NEWTON. Are your factories all on natural streams of water?

Mr. TIERNEY. No; not all of them.

Mr. NEWTON. Where they are not, where does your waste go?

Mr. TIERNEY. Probably into a sewer.

Mr. MICHAELSON. And eventually into the stream. And would it be a great hardship on an industry if a law were passed by Congress requiring it to neutralize its waste products so that they would not poison a stream when they were emptied into that stream?

Mr. TIERNEY. I think it would be quite a hardship. You understand that the chemical industry, like every other industry, is in a sick condition just now.

Mr. MICHAELSON. Well, lots of people are sick caused by the waste products of the chemical industry, are they not?

Mr. TIERNEY. We do not want to assume or take on any more burdens than we have to. But, as I say, we do not want to be in a position of antagonizing or opposing any reasonable measure for conserving the interests of these other people.

Mr. CHALMERS. Personally, would you oppose a law which would protect the oysters and fish, as well as navigation?

Mr. TIERNEY. I do not know that I could give a categorical reply to that.

Mr. CHALMERS. You referred to the Briggs bill and the existing law as applying only to navigation?

Mr. TIERNEY. Yes.

Mr. CHALMERS. Now, it seems to me, from the exposition had from these fishermen and oystermen, that their industry is about as sick as the chemical industry?

Mr. TIERNEY. Well, yes, they have their troubles—and I have admitted that.

Mr. MICHAELSON. And you folks add to their troubles a little, do you not?

Mr. TIERNEY. No, I do not think we do. If it were not for some of our chemicals assisting them in their industry, they would not have any industry. They, and every other industry in the country, if it were not for the chemical industry, could not operate for 24 hours.

Mr. HAYES. May I ask Congressman Chalmers a question that he brought out? Do I understand you to say that it would be the purpose and intent of the committee in the consideration of the matter to treat also an accidental discharge, where there is an accidental discharge and no intention to discharge the waste material into the rivers or waters or navigable streams? You were speaking of the Great Lakes at the time, and I understood you to say that there would be some scheme to take care of an accidental discharge.

Mr. CHALMERS. I could not speak for the committee.

Mr. HAYES. I understood you to say that you would take that up with the committee; not that the committee would act on it.

Mr. CHALMERS. Yes.

Mr. HAYES. And my only suggestion is that where there is an accidental discharge, there should be some relief from the penalty.

Mr. MICHAELSON. In that case, you would have a great many accidental discharges.

Mr. HAYES. I do not think so, Congressman. I can testify from experience in New York Harbor as to the kind of prosecutions that occur up there; and I remember one case particularly, where a boat was tied up to a wharf; and they were going to make repairs to No. 2 tank on that boat; and there was oil in No. 2 tank; and the engineer measured the oil in No. 1 tank for the purpose of determining how many gallons of oil could be transferred to No. 1 tank from No. 2 tank, in order to repair the latter. But he miscalculated the amount of oil in No. 1 tank; and the result that when they pumped the oil from No. 2 tank into No. 1 tank, six barrels of oil went over the side of the ship. They gathered up four barrels of oil by means of sawdust and shavings; but the other two barrels went into the harbor; and they were prosecuted and a fine of $25 was imposed.

Mr. MICHAELSON. Probably that was not enough.

STATEMENT OF MR. J. A. MASSEY, CITY ATTORNEY, NEWPORT NEWS, VA.

Mr. MASSEY. Mr. Chairman and gentlemen, I will not go into the evils that this bill is aimed to correct, because, after having been here as long as we have, we know that there are many; and I am heartily in favor of relieving them as much as possible.

I represent the city of Newport News, Va., and there is only one little clause in the bill that I am opposed to; the rest I favor heartily.

And that is that the sewage and washings from the streets shall be liquid only. Now, you know, and we all know, that we can control storm water sewage from the street, but what can we do with the leaves, pieces of bark, and various other washings from the street? You know also that the sewage which goes through a sewer frequently carries some solids with it; and it was that that I wanted to call to the attention of the committee.

Mr. OSBORNE. That is the language of the law now?

Mr. MASSEY. Yes, sir; but no city has been bothered under the present law, for the reason, I take it, that the present law has heretofore only dealt with solids being put into the navigable streams. Well, I do not say that it is or is not broad enough; but heretofore it has not dealt with liquids being put into the navigable streams.

Now, if you should add specifically liquids, then it will be construed to mean liquids from the sewers too. And I think that the people would want to enforce it. I have in mind this situation: That at Newport News we have had litigation involving the question of the sewers and the oyster beds. The sewers empty into Hampton Roads; there are lots of oyster beds in Hampton Roads. The case went to the supreme court of the State, and to the Supreme Court of the United States; and the latter court said that as yet no method of purification of sewers had been so far accomplished that you can say that they should not be emptied into the sea, the natural receptable of it and the natural purifying basin.

So we do not want the oystermen to come here and say now that "you must strain the sewage before it goes in there," because it is not the sticks and the leaves and the solids that affect the oysters, if they are affected; it is the liquid that is doing that. You can not forbid the liquid. So, therefore, this would not affect the oystermen one way or the other. As a matter of fact, it is generally well known that oysters grow larger and fatter near the mouth of a sewer than at other places; so that that does not kill them. Of course, generally you would not want to eat them until they are transplanted into pure waters; and the law of Virginia requires that they be transplanted into pure waters seven days before they are sold. And they are put in a pure area; and the State board of fisheries marks off the areas that are polluted and the areas that are not. But that is not the question.

Mr. NEWTON. Is it a fact that the oysters thrive and grow fat near the sewers?

Mr. MASSEY. I have seen some very fat oysters near sewers.

Mr. NEWTON. I mean, do they propagate there? Do the young ones thrive near sewers?

Mr. MASSEY. Well, you know you must have a natural bed for the young oysters to thrive on; you must have old oyster shells or something of the kind at the bottom. You can go down to one of those old piles there at Newport News, and you will find them just filled with little oysters. You take those little oysters and eat them, and they will taste of the creosote in the piles; but I have seen people eat them, and I have eaten them myself.

So that it is only that phase of it that I am interested in, that it should be limited to liquids going out of the sewer, when we know that there are some solids going in. In other words, we do not want this law to require us to put in an entirely new system of sewers, and to carry the sewage inland and purify it and drain it before it goes into Hampton Roads.

Mr. MICHAELSON. Well, could you not put in a new sewer system in Newport News? We are doing that in Illinois.

Mr. MASSEY. You are doing that because the State of Missouri is making you do it.

Mr. MICHAELSON. No, the State of Missouri is not making us do it; we did it of our own accord.

Mr. MASSEY. Well, then the water is not sufficiently polluted in the State of Missouri for them to do it; and they said, "Let Illinois do it." Had it been a little more polluted, the State of Missouri would have been on your neck.

Mr. MICHAELSON. Well, why should those systems have been constructed all over the country?

Mr. MASSEY. Well, you take the little city that I live in; and the sewer system there cost $2,000,000.

Mr. MICHAELSON. That is nothing.

Mr. MASSEY. Of course, it is not to Chicago; but it is to Newport News.

Mr. MICHAELSON. But how much did you raise, for instance, during the Liberty loan drive?

Mr. MASSEY. I do not recall.

Mr. MICHAELSON. Considerably over $20,000,000, did you not—just like that did not mean anything?

Mr. MASSEY. Well, there is a considerable difference between defending your country during the war——

Mr. MICHAELSON (interposing). And protecting the lives of your citizens?

Mr. MASSEY. We are not injuring anybody's life; not one. We are not doing the injury that Illinois was; you were putting sewage into the water supply of the city of St. Louis; we are not putting any into any water supply; we are putting it into the natural receptacle that God made for it to go in.

Mr. MICHAELSON. It cost us a good deal more than $2,000,000.

Mr. MASSEY. There is one other matter that does not concern us personally; but I notice that there is no provision in the bill for any discharge from steamers. Now, all of those warships come into our anchorage down there; and if the Appleby bill is passed as it is now, they can dump their sewage overboard, or anything else, because the present law, or the amendments to the statutes, provide for sewage from vessels,

and this bill does not. I do not know whether that was omitted intentionally or unintentionally.

Mr. OSBORNE. That will be given consideration when the bill is taken up for detailed consideration by the committee.

Mr. APPLEBY. Mr. Chairman, I would like to make the request that when the report of Mr. Hoover, Secretary of Commerce, is received, it be made a part of the record.

Mr. OSBORNE. If there is no objection, it will be so ordered.

(The report from the Secretary of Commerce referred to was not completed at the time the hearings went to press).

Mr. APPLEBY. And I also have some letters, resolutions, and briefs from various cities and public organizations upon the matter that I would like to have incorporated in the record.

Mr. OSBORNE. If there is no objection, it will be so ordered.

(The letters, briefs, and resolutions referred to are as follows:)

SOME ASPECTS OF POLLUTION AS AFFECTING OYSTER PROPAGATION.

[By Thurlow C. Nelson, Ph. D., assistant professor of zoology, Rutgers College, biologist, New Jersey Board of Shellfisheries, New Brunswick, N. J.]

If present conditions continue, the greater part of the eastern United States will be cradled in a septic tank, according to this author. The oyster, through its approaching extinction, is an index of this increasing contamination. Protection is needed for the populations of the seaboard and the welfare of those who seek the beaches for health and recreation.

Of all the products which come from nature's vast storehouse of food beneath the seas, none has received the attention of physicians and bacteriologists which has been given to the oyster. Living as it does close to large communities situated on tidewater, and obtaining its food by straining large volumes of water, the oyster may, when eaten raw, become an agency in the transmission of pathogenic bacteria from polluted waters to man. Some instances of typhoid fever in the past have been shown to have been due to eating oysters taken from highly polluted waters, but in other cases there has been an attempt to lay at the door of the oyster blame which rightly belonged on the shoulders of the community. Modern supervision by State and Federal health officials of the waters in which oysters are grown and floated has reduced the dangers of infection from this source to a minimum. Generally speaking, the oysters now obtainable on the market are as safe as our milk supplies.

It is not the relation of the oyster to disease which is to be considered here, but rather the effects upon the oyster and other living forms in our coastal waters, of the waste substances now entering them. In this year of turmoil and unrest we are laying the blame for nearly everything unpleasant on the great war. It will, therefore, be no surprise to you to learn that even the lowly oyster, in its home beneath the waters, has borne its share and more of the destruction involved in this great struggle. The vast industrial expansion, since 1914, in regions close to the shellfish-bearing regions, together with lack of time or of inclination to work out methods of careful refining or proper disposal, has deluged our coastal waters with a flood of industrial waste which is causing wholesale destruction.

In speaking of pollution in connection with shellfish we generally think of contamination by house sewage. As the effects of human wastes and of trade effluents upon a body of water are entirely different, they must very sharply be defined. Domestic sewage, as a rule, contains little or nothing which is toxic to aquatic organisms. It does contain large amounts of decomposable materials which when broken down yield, among other products, carbon dioxide and nitrates. The presence of these substances causes a marked stimulation of growth of aquatic plants, mostly microscopic in size, which is followed by an increase in numbers, and often of size, of the animals which feed upon them.

The putrefactive and other bacteria which decompose the sewage and render it available as plant food, are aided in this process by a host of animal forms, all of which work together to bring about the ultimate oxidation of the wastes. Bacteria, plants, and animals together form a highly complex and interrelated group known to biologists and to sanitary engineers as the biological machine.

Under favorable conditions a small stream may dispose of the sewage of a relatively large population, and the stream in turn be supplied with a constant source of animal and plant nutriment. There is a true fertilizing action upon the water with a resultant large increase in the numbers of the organisms present. Since fish and shellfish utilize these plant and animal organisms as food, it follows that the addition of domestic sewage to a body of water will result ultimately in an increase in the amount of human

food, in the form of fish and shellfish derived therefrom, as truly as though the sewage were employed in fertilizing land crops. Comparative biological surveys made on Lake Monona, Wis., the Illinois River, and the Elbe in Germany, show that an enormous increase in the numbers of aquatic plants and animals follows the introduction of domestic sewage into a body of water.

Shellfish growing in waters contaminated with human wastes are usually very fat, not as is ordinarly supposed because they are eating sewage, but owing to the great number of food organisms which in turn are deriving their nutriment from the products of decomposition of the sewage. In the process of feeding in grossly polluted waters shellfish may take in typhoid bacilli, thus rendering them dangerous as human food until removed for a short time to uncontaminated waters, or otherwise purified.[1]

The nitrates and other salts essential for plant growth which are produced in the decomposition of sewage, and those which are brought to the streams by the leaching action of ground water upon the land, ultimately pass out to sea and are lost as a source of human food. Only as we utilize the coastal waters for the growing of fish and shellfish are we able to conserve and to transform into human food this continual loss of essential salts from the land. The oyster industry alone produces over $15,000,000 worth of food every year, equivalent to more than 400,000 dressed steers.[2] Considered in this light, the oyster and other shellfish are true consevators.

The wastes from factories and manufacturing plants of all kinds present an entirely different problem. Here we are dealing with effluents which, though they may contain decomposable materials or some salts essential to plant growth, are in general highly toxic to aquatic organisms. The report of the Committee on Waterways Sanitation presented to the Sanitary Engineering Section of the American Public Health Association at this convention gives a tentative classification of industrial wastes into some 20 or more groups. For convenience we may divide these effluents roughly into the following four classes: (1) Acid or alkaline wastes; (2) oil and oil wastes; (3) various chemical substances in solution, such as metallic compounds, dyestuffs, and washings from many industrial processes; (4) precipitates held in suspension.

Natural waters are usually neutral or slightly alkaline in reaction. Experiments of limnologists and physiologists show that aquatic forms are extremely sensitive to changes in the hydrogen-ion concentration of water. Even a very slight degree of acidity will cause animals to leave a certain area, or will kill those which remain. Caustic soda and lime in high concentration as contained in the effluents from many industrial plants cause a heavy mortality among fishes and other animals.

Oil, by spreading a film over the surface of the water, or by coating animals and plants with an impenetrable layer, ultimately kills them either by direct contact or by preventing free interchange of oxygen and carbon dioxide. From the ease and the rapidity with which it is disseminated and the small amount which is required to cover a large surface, it is, gallon for gallon, one of the most destructive of the foreign substances entering our streams.

Dyestuffs, metallic compounds, and many other chemical substances are poisons with a high degree of toxicity. Even when highly diluted these substances will kill nearly all living forms in a stream for miles below the point of entrance. Precipitates in suspension, such as the waste from pulp mills, canning factories, and the like may fall to the bottom soon after entering a stream and never reach the lower waters. In other cases these precipitates may be carried for long distances and in their decomposition exhaust all, or nearly all, of the stream's available oxygen, causing the suffocation of the animals therein.

The adult oyster, unable to move away, must take the water as it comes to it. Metals or dyestuffs, though present in very minute amounts, are accumulated by the mollusk until its flesh becomes highly colored and even unfit for human food. Analyses of green oysters taken from beds lying from 5 to 10 miles from a copper refinery have shown as high as 20 milligrams of copper per oyster, over five times the normal copper content of the animal. Oil, by destroying the organisms which form a large part of the oyster's food, and by reducing free oxidation, eventually kills the bivalve indirectly, even though the oil itself never comes in contact with the beds upon which the oyster lies. The oxidation of decomposable precipitates so far exhausts the available oxygen that the oyster may be suffocated.

But long before these effects of industrial wastes are felt by the adult oyster its young have been eliminated. The egg of the oyster develops within six hours after fertilization into a free swimming embryo, which moves about in the water partly by its

[1] See Wells, W. F., The Purification of Oysters as a Conservation Measure. Jour. A. P. H. A., April, 1920.
[2] Moore, H. F., Oysters, a Little of Their History, and How to Cook Them. U. S. Bureau of Fisheries, Economic Circular No. 18, revised. Issued Mar. 18, 1918.

own efforts but chiefly through the action of currents. When one to two days old it develops a pair of tiny shells, between which is protruded the ciliated swimming organ, the velum. With the aid of the velum the little oyster larva ascends to the surface and may spend much time moving about just beneath the surface film. When about 0.32 of a millimeter in diameter it seeks out a shell or other fixed object, and there attaches itself, to spend the remainder of its life on that spot.

During the free-swimming period, which lasts from 14 to 16 days in waters of the middle Atlantic coast, the larval oyster is exposed to many hazards from enemies, storms, or a sudden fall in temperature. It is extremely sensitive to unfavorable conditions, far more so than is the adult. As if its natural enemies were not enough, the larval oyster must now contend with industrial wastes, and the struggle can have but one ending. A film of oil on the surface of the water will kill molluscan larvæ within a few hours, owing largely to their habit of swimming close to the surface. The effect of other industrial wastes, as shown by Skinner and Sale in Bridgeport Harbor,[8] is to render the water unfit for the existence of oyster larvæ. The oyster grower depends for his seed upon the larvæ which survive the free-swimming stage and attach to his shells. A few years of successive failure to secure seed and his business is ruined.

Such is the condition now facing Connecticut, Rhode Island, and New York, at one time three of the leading States in oyster production. For five years practically no oyster larvæ have set in New England waters. The industry there is now facing extinction. Scientific and practical testimony agree in attributing the chief cause of failure to the great outpouring of industrial wastes incident to the war. New Jersey, Delaware, and Maryland, with oyster grounds further removed from industrial centers, have thus far suffered less. The end is inevitable, let present conditions continue, and in 10 years the oyster in our northeastern States will be only a memory.

But why do I come to plead the oyster's cause to you, physicians and health officers? If the oyster alone were concerned we could afford to lose it in view of the value of our industrial products. I come to you because the study of conditions in our coastal waters shows clearly the approach of a national calamity. The industrial wastes which kill the oyster larvæ, at the same time destroy the biological machine which normally takes care of the self-purification of our streams and coastal waters. The stream which a few years ago disposed of large volumes of sewage can now no longer do so, with the result that the banks are strewn with heaps of putrid fecal matter. During the warm months these accumulated masses swarm with flies, adding to the dangers of the situation.

As the poisonous effects of industrial wastes extend further and further downstream the area of bacterial contamination is by so much increased. Pollution has passed far beyond its former bounds, and now is invading the bathing beaches and the shellfish areas which a few years ago were miles from any source of contamination. Evidence from many sources shows that pollution is progressing rapidly down nearly all of our large streams. Unless present conditions are remedied there can be but one result—in 10 to 15 years the greater part of the eastern United States will be cradled in a septic tank.

The disposal of industrial wastes in such a way as to render the effluents harmless when emptied into a stream, and still not impose an undue tax upon the industries concerned, presents a problem which will require the best efforts of chemists and engineers for years to come. As yet we have made scarcely a beginning, but when we consider what the preservation of the natural purity of our waters means to us and will mean to posterity in the future, it is evident that relief from present conditions must be sought without delay.

To this end physicians, health officers, engineers, biologists, fishermen, oyster growers, and hotel keepers and property owners of our summer resorts must unite in the endeavor to work out a rational solution of the problem. In many instances highly poisonous substances are being thrown into streams merely as the result of carelessness on the part of the offenders and the indifference of the general public. The rapidly increasing population and the industrial expansion of the northeastern part of our country close to the Atlantic seaboard present a very serious problem. To protect the health of the thousands which flock each summer to the resorts on the coast, as well as to maintain the purity of the water of the shellfish-bearing areas, the flood of poisonous industrial wastes now entering the coastal waters must be curtailed and the natural purity of these waters thereby restored.

[8] Skinner, W. W., and Sale, J. W. Paper presented to American Chemical Society. Abstract in Science, N. S. Vol. LII, Sept. 17, 1920.

BRIEF SUBMITTED BY THE HON. W. B. BAMFORD, MAYOR OF BELMAR, N. J.

The borough of Belmar, N. J., is located on the Atlantic Ocean approximately 20 miles south from the entrance to New York Bay. It has a summer-population of from 20,000 to 25,000 persons.

Belmar is distinctly a summer residential community whose very existence is due to its location on the Atlantic Ocean, thereby affording ocean-bathing facilities to its summer population who come for rest and recreation.

It has within its boundaries the inlet to Shark River and a large part of the river itself. This river is used commercially by deep-sea fishermen and is also the breeding ground for the famous Shark River oysters and crabs.

The casting of refuse oil into the waters of the Atlantic Ocean by oil-burning and oil-carrying steamers has, during the last few years, developed from a matter of inconvenience and annoyance to the people frequenting the beaches on the Atlantic to a serious menace to the health, happiness, and prosperity and even safety of the lives and properties of the inhabitants of seashore municipalities. When most of the ocean-going vessels were using coal for fuel it was only infrequently that the beaches would be marred and soiled by what little oil would be cast up by oil-burning vessels, but with the increase in the number of vessels using oil for fuel and the careless method of emptying or disposing of the same on their approach to New York Bay the trouble has become acute, and the Federal Government should intervene and prevent that which has now become such a serious nuisance and source of danger.

The pollution of our ocean beaches and river shores by making them unfit for bathing if continued will be almost suicidal to communities such as Belmar, whose summer bathing season is always limited to a maximum of three months from June 15 to September 15. This contains 13 to 14 week-ends, with the three big week-ends around Decoration Day, Fourth of July, and Labor Day. On these three big week-ends largely hangs the financial success or failure of the season for the greater part of the north Jersey coast. An oily beach on these three days can not be replaced financially by clean beaches for the remainder of the year.

Among the additional direct damage from oily waters is the destruction of fish, crabs, oysters, and clams through contact with the oil. These abound in large numbers in the waters of Shark River and the ocean adjoining Belmar. The fire hazard is also greatly increased from the fact that the oil has a tendency to collect and adhere to the bottom of wooden boats, boathouses, piers, bulkheads, pavilions, and other wooden structures with which it comes in contact, with the inevitable result of making them highly inflammable and a constant source of danger.

The direct damage occasioned by this nuisance is reflected and measured by the hundreds of people who have been and are becoming disgusted with the inability to overcome this evil and have sold or are contemplating selling their properties at a sacrifice, and those who refuse to rent cottages or come to the hotels, and instead of spending their summers at the seashore as formerly now go to the mountains or lakes or remain at home, although their preference would still be for the seashore, with its ocean bathing, if they could have their beaches clean and uncontaimnated with oil and tar.

The practice of vessels emptying or disposing of their oil and tar as at present would constitute a nuisance in the eyes of the law, and every municipality damaged thereby could successfully, we believe, prosecute a suit for damages against the owner of the boat responsible for the nuisance. But the trouble is that the arms of the municipalities are too short to effectively deal with the situation, and in this predicament they confidently turn to the Federal Government, feeling sure that it will intervene for the protection of their inhabitants and the hundreds of thousands of summer visitors who annually flock to their beaches for rest and recreation.

The Government does not hesitate to legislate and appropriate for the protection of the national parks, yet here is one of nature's fairest jewels daily desecrated and polluted by selfish corporations who have no thought other than of disposing of their refuse in the cheapest manner possible, no matter what harm that mode of disposal may cause to the health, happiness, and prosperity of others.

The nuisance being committed on the navigable waters of the United States, there is no question of the jurisdiction of the Federal Government to legislate against it, and it would seem, from even the brief statement of facts above mentioned, that the wisdom of such legislation is apparent.

Respectfully submitted.

WM. B. BAMFORD, *Mayor of Belmar.*

OCTOBER 21, 1921.

BRIEF OF PHILADELPHIA BOARD OF TRADE.

OCTOBER 23, 1921.

COMMITTEE ON RIVERS AND HARBORS,
House of Representatives, Washington, D. C.

GENTLEMEN: The Philadelphia Board of Trade is thoroughly alive to the importance of the early enactment of such legislation as will severely penalize the masters of vessels who shall be guilty of casting oil into the sea adjacent to our coasts or into the navigable waters of the United States.

The subject has had the careful consideration of our local authorities, who are impressed with the necessity of national legislation as the only safeguard against the dangerous practice under consideration.

It has been the practice of "light" steamers arriving at the port of Philadelphia from Europe and other points to begin pumping out their tanks and bilges as soon as they enter the Delaware capes; hence the danger from floating oil is experienced all the way from the sea.

In addition to the fire hazard arising from the cause stated, there is added danger through the escape of oil from a number of oil works where tank steamers are loaded and discharged outside of the limits of the State of Pennsylvania. The public press has repeatedly called attention to the dangerous practice under criticism, which may be briefly summarized as follows:

Oil so discharged floats upon the surface of the water and is readily communicated to the wharves and vessels in our harbors, with consequent danger from fire, as instanced by an accident in New York resulting in the burning to the water's edge of the Government craft *Granite State*.

The destruction of ocean fisheries is threatened by this practice, as oil so discharged must seriously endanger if not destroy sea food, and to that extent serve to reduce food supply and increase thereby the cost of living.

The bathing beaches along the Atlantic have been seriously affected by this practice, and unless some remedy by legislation is found a very serious depreciation in the value of our seashore resorts may follow and many thousands of persons be compelled to forego the bathing privilege and its healthful advantages.

The National Board of Fire Underwriters has sounded a warning as to the danger of fire through this floating oil, and unless a remedy is found the insurance interests may seriously consider an increase of rates upon property liable to be affected by the threatened risk of fire through oil so floating in our harbors.

The board of trade, in a memorial adopted June 22, 1921, in considering the provisions of a bill "to protect the harbors of the country from the danger arising from the discharge of oil on the navigable waters therein," said in part:

"That already much damage has occurred through the habit of vessels discharging oil while in port, and the danger to life and property from fires resulting thereby demands that steps be at once taken by the Government to make unlawful the practice complained of; that the National Board of Fire Underwriters, alive to the increased risk of fire through the menace of floating oil on our rivers and in our harbors, had sounded a warning, and the Government is urged to early enact such legislation as will penalize a practice so fraught with danger."

The Philadelphia Board of Trade heartily indorses any legilsation which will make illegal and punishable the pollution of the navigable waters of the United States and on the high seas by refuse oil as far as Congress has the power to legislate.

Respectfully submitted.

THE PHILADELPHIA BOARD OF TRADE,
WM. M. COATES, *President.*
W. R. TUCKER, *Secretary.*

STATEMENT AND BRIEF OF MILTON WEST, OF LONG BRANCH, N. J.

NORTH LONG BRANCH, N. J.,
October 22, 1921.

Hon. T. FRANK APPLEBY,
House of Representatives, Washington, D. C.

DEAR SIR: When a man begins to talk about fish or fishing the people sit up and expect to hear a whopper, but this is not one of them. The facts will be sufficient.

I have followed hook-and-line fishing all my life, as did my father and grandfather. I claim to know something about fishing and the movement of fish. Fish are very sensitive to the water they are in. It must be pure and the right temperature; if it

is not, they will not stay in it and, by moving a few miles, may find the kind of water they are looking for. I have reference to bluefish, our principal catch.

It is a well-known fact that New York Bay is literally covered with waste oil. Where the fish go for spawning and when the water is cold out in the ocean we always look for good fishing in that vicinity. When the water was not the right temperature outside this year it has been a total failure there. I have not heard of one lot being caught in that vicinity.

Up to about two years ago we would have good fishing up in what we may term the "oil zone." My brother and I caught 2,000 pounds of bluefish in a single day. We pulled in 8,000 pounds in that week, and we were only one of many a hundred or more boats. None have been caught there this season. If it is not the oil that brought the change, I do not know what it is.

Heretofore days when we could not locate the bluefish, then we would go after sea bass and would catch at least from 5,000 to 10,000 pounds each season. This year we haven't caught 50 pounds a boat. We always had good sea-bass fishing in September, when they come out of the bays to go south. Now there doesn't seem to be any coming in or going out.

If we pollute the spawning grounds, we do a great injury to the fishing industry. One day a very few years ago I caught 2 barrels (500 pounds) of bluefish. I shipped them to Philadelphia and received less than $2 for the shipment on account of the supply being greater than the demand. Any time this season that many bluefish would have brought me $60 to $70. Now, just think of shad and menhaden, that live on suction going up through the oil-covered bay and Hudson River. Can you wonder they have fell off 75 per cent in quantity?

The pollution of the navigable waters by oil refuse is a nuisance and menace from every angle. Even the firewood the poor people gather from the beaches is not fit to handle.

The oil that comes out of the bay and rivers with the ebb tide and with what is already outside when the wind is from the right direction, it is blown ashore. In the summer it gives the bathers a nice bath. There is one way to get this tarlike oil off your person, and that is to take the skin with it. Water and soap will not have the desired effect.

I sincerely hope bill H. R. 7369 will become a law for the interest of the fishing industry.

Yours, very respectfully,

MILTON WEST.

STATEMENT AND BRIEF OF HON. ABRAM C. JOHNSON, MAYOR OF MONMOUTH BEACH, N. J.

MONMOUTH BEACH, N. J., *October 22, 1921.*

MR. MILTON WEST,
Long Branch, N. J.

MY DEAR MILTON: I understand that you are to attend a meeting in Washington on Tuesday of next week that has been arranged by Congressman Appleby relative to the polluting of the Atlantic Ocean with waste oil from incoming and outgoing steamers. I should have liked to attend this meeting, but owing to important business I will be unable to do so.

I would appreciate it if you would personally put Monmouth Beach on record as against the continuance of this nuisance—

First. Because it is destroying our food fish and is practically putting out of business all of the old-time fishermen of our vicinity who have to depend solely upon the fishing industry for a livelihood. In the past few years the cost of various kinds of fish has increased from 500 to 600 per cent. As an illustration, I owned and conducted a cold-storage plant at Monmouth Beach, which I used exclusively for the freezing of fish, up to February, 1920. In 1915 I bought bluefish as low as 3½ and 4 cents a pound; in 1916 they jumped to the average of from 7 to 8 cents per pound; in 1917 to the average of about 12 cents per pound, and in 1920 to 25 and 30 cents per pound. These prices are based on wholesale quantities. Besides, I was compelled to leave our State and go as far south as Virginia and Maryland to buy fish so that I might continue in business. In my opinion, if the practice of pumping oil is continued in and around our harbors, in a very short time our salt-water fish will be a thing of the past.

Second. Oil from the various steamers has been a serious handicap to our bathing for the past two summers. It is not an uncommon thing to see a bottle of gasoline at bathing pavilions for the use of bathers. After taking their ocean bath they are compelled to take a gasoline bath to remove the oil and tar. In fact, it occurs very often that the bathers will be obliged to go for several days, on account of the condition of

the water from the oil, without bathing. If there is not some relief, I feel confident to say that our seashore property will greatly depreciate in value.

Kindly give my best regards to the honorable Mr. Appleby and his secretary and assure them that we will be grateful for any relief offered us.

Sorry that I will be unable to be with you.

Yours, sincerely,

A. O. JOHNSON.

STATEMENT AND BRIEF OF CHARLES B. LOCKWOOD, NORTH LONG BRANCH, N. J.

NORTH LONG BRANCH, N. J.,
October 21, 1921.

Hon. FRANK T. APPLEBY,
House of Representatives, Washington, D. C.

DEAR SIR: I take great pleasure in writing you at this time and admire your energy in presenting a bill entitled "Against pollution of oil refuse." I have been a pound fisherman for over 28 years and was in the business quite extensively and sorry to say that we were forced to retire from our business on account of the scarcity of all kinds of fish, which were plentiful in former years along our New Jersey coast.

We attribute our failure to this great menace of refuse oil, which is pumped from steamers and spread upon the ocean for miles, and so detrimental to the functions of fish. A great many fishermen who are in the pound fishing business this present year can not say whether they will pay expenses or not.

By presenting this bill I know you would like to hear some facts relating to the disappearance of fish from our coast, and I will endeavor to go a little further in detail and let you know, as my memory serves me, what fish we caught in former years and what is caught to-day.

We have caught 1,000 barrels, or 200,000 pounds, of weak fish, our principal fish, in one week, as many if not more than has been caught the entire season for this year. Our native Spanish mackerel, which were so numerous years ago, catching from 3,000 to 4,000 pounds in one day, are now very nearly extinct.

Sheephead, which we used to catch by the boatload, 400 or 500 in number at one time, are entirely wiped out. These two varieties of fish in particular, so susceptible to the change of water conditions, have disappeared from our coast since these waters have become polluted with this oil. Shad has the same history, and, in fact, all varieties of our native fish have decreased so suddenly that a great many of those at present in this fishing industry can not carry on business at a profit.

My father, Capt. Nelson Lockwood, and myself have made a profit of $12,000 in one season years ago, and made considerable money in the fishing business, but lost nearly all we made by continuing too long in our industry that was failing so fast.

I earnestly hope you will have success in the argument of this bill, so that others in the same industry, which is quite extensive along our coast, may be benefited by your energetic work.

Yours, very respectfully,

CHARLES B. LOCKWOOD.

STATEMENT AND BRIEF OF HY. S. WATSON, EDITOR OF "FIELD AND STREAM."

FIELD AND STREAM,
New York City, October 21, 1921.

Hon. T. FRANK APPLEBY,
House of Representatives, Washington, D. C.

MY DEAR MR. APPLEBY: I thank you for your kind invitation to attend the hearing to be given before the Committee on Rivers and Harbors on October 25, on the bill H. R. 7369, which you introduced in the House of Representatives, relative to the pollution of our coastal and harbor waters by the discharge of oil from oil-burning steamers and steamers carrying oil washing their tanks in controlled waters.

It is with extreme regret that I can not so arrange my time to attend this very important meeting.

There is no doubt in my mind but what you are ably prepared to state your case with many facts, both scientific and otherwise, for the conditions are so blatant that one would be able to array a formidable number did he but look for them and I know your heart is in this, and only too easily did you pile up evidence on a very serious and growing situation.

No matter what arguments and facts you offer, they can not be too strong, and I am sure that my own feelings are 50 per cent stronger than yours, for I imagine I have viewed with my own eyes more of your coast last summer than you or any other of the gentlemen have that will attend the meeting.

I will attempt no brief or no arguments, but will suggest that any doubting Thomas go see for himself anywhere he so chooses. I will tell him how to make his observations and tests, if he so desires.

In the past summer, Field and Stream was engaged in taking surf fishing pictures from Cape May to Montauk Point, and I was necessarily more or less in close contact with the outfit. To say I was appalled at the conditions is putting it very mild. It has happened within almost a few months, this crawling, deadly, insidious oil that will not mix with water; it is a case of rapidly growing pollution, pure and simple, pollution that can not be absorbed by the water, that will destroy the coastal recreation places and the fish as sure as deadly quicksand does its work, sucking them all under to destruction, slowly but surely. This bill should have no arguments against it—should be passed to-morrow—but naturally the oil-burning steamship crowd are going to fight it, as it means an added expense to them in getting rid of the refuse or discharge by some other means.

I can not look into the future with assured pleasure if I am to see the white sands of our beaches a greasy, slimy mass of oily muck and the surf deadened and smothered under a floating mass of grease that causes the fish to die or leave for purer waters. I have written this with no axe to grind; simply as a sportsman. I have been out where this monstrous thing is happening and I have shuddered at the future if nothing is done.

The conditions in our harbors I am not familiar with, but I can imagine.

You will please accept my renewed regrets that I can not be with you at the hearing, and also accept my best wishes for the speedy passage of your very good bill. Field and Stream stands ever ready and willing to give you what assistance is in its power.

Very truly, yours,

HY. S. WATSON.

COMMUNICATION FROM BOARD OF TRADE OF CAPE MAY, N. J., REQUESTING A FAVORABLE REPORT OF H. R. 7369.

BOARD OF TRADE,
Cape May, N. J., October 21, 1921.

COMMITTEE ON RIVERS AND HARBORS,
House of Representatives, Washington, D. C.

GENTLEMEN: At a meeting of our board of trade last evening I was directed to communicate with your committee to ask you to favorably report House bill No. 7369, introduced by Congressman T. Frank Appleby, of this State, making illegal the pollution of the navigable waters of the United States by allowing refuse oil to be deposited therein.

We in this seaside resort have been bothered for several summers with the deposits floating upon our beach strand and so coming in contact with the thousands of bathers, and causing them to have their bathing robes ruined with the contact. At times it has driven many from our beach and thereby lost to us many visitors, and the hotels a loss of trade.

May you, therefore, heed our needs financially by having the bill sent to the floor of Congress for consideration? Thanking you for such action, we are,

Yours, very respectfully,

LEWIS T. STEVENS, *President.*

COMMUNICATION FROM HON. FRANK C. BORDEN, JR., MAYOR OF BRADLEY BEACH, N. J., REQUESTING A FAVORABLE REPORT ON H. R. 7369.

BOARD OF COMMISSIONERS,
Bradley Beach, N. J., October 21, 1921.

Hon. T. FRANK APPLEBY,
House of Representatives, Washington, D. C.

MY DEAR CONGRESSMAN: Your favor of October 10 duly received and contents noted.

The bill (H. R. 7369) making illegal the pollution of the navigable waters of the United States by refuse oil is of so much importance to the people of Bradley Beach and the entire shore, that I believe it is essential for a representative of every shore

municipality to be present at the hearing on Tuesday, and I had fully intended to be in Washington on that day to lend my presence to the cause. I find it impossible to attend the meeting, but feel sure, and am confident, that you will succeed in taking care of the situation to the advantage of the entire shore community.

It is indeed a great menace to our seashore resorts from the bathing standpoint, and it is a great detriment and loss, and causes unneeded hardships through the killing of edible fish by the waste oil.

I have talked with many of our citizens and the commissioners of our borough and find them all of the opinion that it is absolutely necessary to the benefit of the entire public to make every effort to have this destructive nuisance eliminated. Thanking you in advance for your efforts in behalf of Bradley Beach and the shore communities, I beg to remain,

Yours, very truly,

FRANK C. BORDEN, Jr.

STATEMENT OF HON. EZRA PARKER, OF BARNEGAT, N. J.

BARNEGAT, N. J., *October 20, 1921.*

Hon. T. FRANK APPLEBY,
House of Representatives, Washington, D. C.

MY DEAR MR. APPLEBY: I regret very much that I will be unable to meet with the River and Harbor Committee on October 25 regarding the pumping of oil refuse from oil-burning steamers, but permit me to state that the situation along the beaches in Ocean County is having a tendency to destroy the value of all ocean-front property because of the washing ashore of great amounts of this crude oil; also great masses of it become fast in the fish pounds and nets, and this floating oil is driving the fish farther off shore. This past summer has shown that the fish have practically been driven out of Barnegat Bay by this floating oil coming into Barnegat Inlet and spreading out over Barnegat Bay, and this will in a short time entirely destroy our oyster and clam grounds. Our bay captains will all tell you that their cables become fouled with this floating oil in a few minutes after anchoring in the bay or inlet to fish. One of our captains stated to me that within a few days he saw a strip of this crude oil several miles in length just off the Barnegat Light.

This is indeed a serious condition for the people of Ocean County, not only for those owning property along the ocean front but all our bay men who depend upon the bay for their living, by fishing, oystering, clamming, etc. Also, last winter great numbers of wild fowl were found covered with this crude oil, and were thin and their flesh of a peculiar color, showing the effect of this oil. In fact, some of them were so completely covered with it that it was difficult to tell what breed of wild fowl they belonged to. I sincerely hope that prompt measures will be taken to remedy this evil.

With kindest regards, and regretting very much that I will not be able to meet with the committee, I remain,

Very truly, yours,

EZRA PARKER.

BRIEF SUBMITTED BY HON. ALFRED E. SMITH, GOVERNOR OF NEW YORK.

NEW YORK STATE DEPARTMENT OF HEALTH,
Albany, August 30, 1919.

Hon. ALFRED E. SMITH,
Governor of the State of New York,
Executive Chamber, Albany.

DEAR SIR: In compliance with your order of August 12, 1919, requiring me to investigate the pollution of the waters of New York Bay and Jamaica Bay and their tributaries by the discharge of wastes from manufacturing plants engaged in the manufacture or production of coal tar or aniline by-products or wastes, including gas houses, and to report to you on or before September 1, 1919, I beg to submit the following:

The basis of this investigation were the complaints of the Waterway League of America, through its committee on purification of waters, of which Mr. Franklin Taylor is chairman, and of the Cedar Grove Beach Corporation, of which Mr. Joseph R. King is secretary. set forth in communications to you and verbally in a conference held with you at which Mr. Taylor and the chief engineer of the department were present. The complaints are generally to the effect that the wastes from the manu-

facturing plants referred to grossly pollute the waters of New York Bay and Jamaica Bay, causing large areas of "oil sleek" to drift back and forth with the tides, and which, together with the discoloration of the waters from aniline dyes, injuriously affect bathing and yachting, discolor the paint on yachts and other craft, cause discoloration of oysters, and in these and other ways produce an objectionable nuisance. The complaint, it should be carefully observed, is specific in regard to both the materials causing the nuisances, which are alleged to be the oil wastes and aniline dyes, and the sources of the nuisance which are attributed to the manufacturing plants engaged in the manufacture or production of coal tar or aniline by-products and wastes, including gas houses.

The general pollution of these waters by sewage and manufacturing wastes is, as you know, a subject that has been very thoroughly investigated during the last 20 years, not only by this department from time to time but by the Metropolitan Sewerage Commission of New York City and the Passaic Valley Sewerage Commission of New Jersey and the Bronx Valley Sewer Commission of Westchester County. These investigations were made with great care and in great detail and are carefully described in the numerous and voluminous reports of these official bodies. While differing to a considerable extent as to details and plans for removal of pollution, practically all of these official bodies are in substantial agreement that the waters in and around New York Bay are grossly polluted by sewage and manufacturing wastes and that steps should be taken without delay to remove or lessen it. That the situation is fully realized is evidenced by the active steps which have been, and are being, taken by the New York City authorities, the Bronx Valley Sewer Commission, and the Passaic Valley Sewerage Commission in the installation of disposal works for the partial treatment of sewage and factory wastes from portions of the districts under the jurisdiction of these authorities.

Although the investigations of these commissions were directed primarily to the general pollution of these harbor waters by both sewage and manufacturing wastes, it is significant to note, particularly in the light of the conclusions reached in this report, that in none of the reports of these investigations, covering some 20 years, was any special mention made of the specific pollution referred to by the complainant, namely, oils and aniline dye wastes from the class of manufacturing plants in question. In fact if the conditions complained of now had existed during the many years of investigation of the New York Metropolitan Sewerage Commission which made its final report in 1914, and during which period many if not all of the plants now complained of were in operation, it would have been very surprising had that commission not observed them or made reference to them in its reports. The inference to be drawn from the absence of any such reference would naturally be, therefore, that the specific pollution from these oil and dye wastes, now complained of, was of little importance or significance prior to 1914, or that such pollution has originated since 1914 and is attributable to some other source than the manufacturing plants in question.

In order then to determine whether the manufacturing plants referred to in your order are discharging wastes into these waters in objectionable quantities and whether these wastes are responsible or could be responsible for the pollution referred to by the complainant and the objectionable and injurious results caused by it, the engineering division was at once directed to inspect all of the plants manufacturing coal tar or aniline by-products within the territory tributary to New York Bay and Jamaica Bay.

In order to obtain the number, location, and names of the various plants covered by your order, reference was made to the records of the State industrial commission. This was supplemented by information obtained from the various departments of the city of New York, from the main offices of the manufacturing corporations in the city, and from independent observation in the field. From these sources, it was learned that there are some 67 plants of the character mentioned in your order, of which 53 were gas manufacturing plants, 1 was a coal-tar by-products plant, 9 were aniline dye works, and 4 were oil refineries.

The investigation included an inspection of each plant, and the securing in connection with each of them such essential data and information as would indicate the size of the plant, the character of the processes carried on within them, the amounts of raw and finished products, the character and amounts of any wastes produced, the extent of waste treatment or utilization methods adopted to prevent pollution, the character and amounts of wastes actually discharged into these waters, and the effects produced by any such discharge. These data were carefully studied and a summary of the results set forth in tabular form.

While the field inspections of the manufacturing plants were in progress and the information collected began to indicate that wastes from these manufacturing plants could not be a considerable, if any, factor, in the causation of the conditions complained of, other field observations were made for the purpose of discovering more

definitely the nature and sources of this oil pollution. Inspections were therefore made of various bathing beaches on Long Island and Staten Island and of the harbor and bay waters at various points. The superintendents of the various beaches, and other persons, were carefully questioned as to the dates and atmospheric conditions when the bathing beaches were affected by oil wastes, and the nature and extent of the nuisance created; and the city and harbor officials consulted as to their knowledge in the matter. By unusual good fortune we were notified of the presence of an "oil sleek" area in the vicinity of South Beach, Staten Island, on August 23 when an inspection of the conditions was made by one of our engineers and samples of the oil and sludge collected.

Before detailing the results of the investigation a description will be given of the processes carried on in the four classes of manufacturing plants covered by the investigations, namely, the gas plants, coal-tar products plants, the aniline dye works, and the oil refineries, the latter of which might by inference be included in your order.

GAS WORKS.

The production of illuminating gas is accomplished by two general processes, the water-gas process and the coal-gas process. The water-gas process is the one more commonly employed at the present time. These two processes will be described separately.

Water-gas manufacture.—Carbureted water gas is produced by heating to incandescence a body of coal in a generator and then passing over the heated coal a jet of steam under pressure. The result is a dissociation of the water and the liberation of hydrogen gas, which is the basis of the final product. The gas is then passed to a carbureter in which certain illuminants in the form of oils are added. The carbureter contains heated bricks having void spaces and the gases are passed through them. The gas is then stabilized by heating in a superheater. It is then passed to a water seal box where it is cooled and certain impurities removed, thence to a scrubbing tower where certain other impurities are removed; thence to a condenser where condensation and further removal of impurities takes place. From the condenser the gas is passed through a relief holder, then to the purifier and finally to the gas holder where it is stored for distribution through gas mains to consumers.

Liquid wastes are produced at three points. The first of these occurs at the seal box where condensation of tar and certain oils takes place. The second occurs at the scrubber, where, if the scrubber is of the "wet" type, i. e., in which the gas is washed by water spray, additional tar and oil wastes are produced. The third place is at the condenser where condensed water and tar are produced.

In the more modern plants little, if any, of these wastes are discharged into adjacent waters but are treated for the recovery of tar and oils. This is done by passing the wastes from the water seal box, the scrubbers and the condensers into a settling tank provided with a bottom and a top baffle, and in which the tar is settled out and the lighter oils skimmed off. In modern plants the gas liquor is returned to the seal pots and used over again thus making it unnecessary to discharge any gas liquor into nearby waters. If there should be a surplus of this circulating gas liquor over that which can be returned to the seal pots it is customary to pass it through a filter of shavings which practically completes the removal of the oil contained in it.

Coal gas manufacture.—The manufacture of coal gas is carried on in a manner very similar to the manufacture of water gas, the principal differences being that bituminous coal is used instead of anthracite, that no water in the form of steam is used in the distillation of the coal, and that no illuminant oils are added to the gas.

The liquid wastes from coal gas plants are practically the same as from the water gas process and the methods of treatment of these wastes and the recovery of coal tar and oil substantially the same as in the water gas process.

The coal gas process requires however, the use of wet scrubbers, and incidentally results in the production of more coal tar wastes. In this process also it is possible to utilize the gas liquor for the manufacture of ammonia and at plants where ammonia is manufactured, there is, therefore, no gas liquor to be discharged into the stream.

COAL-TAR PRODUCTS PLANTS.

In plants of this character crude tar is received from gas and coke works and is pumped into storage tanks from which tanks it is conveyed to dehydrating stills where the water and some of the lightest oil are driven off and passed through a separator or "pan." In this "pan" the light oil and water are separated by gravity. The dehydrated tar is discharged into large stills where different fractions of light and heavy oils, as may be desired, are distilled off and condensed in coil condensers.

The residue from these stills is used for fuel oil and for saturating felt to make building and roofing paper.

The only wastes from the plants are the wastes from the pan where the oil and water driven off from the dehydrating stills are separated, and the tar and oil drainage from the yards, there being no wastes from the building and roofing paper manufacture. The drainage from the yards and the discharge from the separating pan are passed through settling basins or separators provided with submerged outlets. The tar which settles to the bottom and the lighter oils which collect on the surface of these basins are removed and utilized. The purified effluent is usually discharged directly or indirectly into some nearby stream or other body of water.

ANILINE DYE WORKS.

In making aniline dyes the following are some of the more important ingredients used: Refined coal tar products, such as orthotoluidine, benzoldehyde, aniline, anthracene; mineral acids such as sulphuric acid, muriatic acid, nitric acid, acetic acid; and inorganic salts, such as sodium nitrate, prussiate of soda and sodium chloride. The process of manufacture varies considerably. Different processes and ingredients are used not only for making different colors, but also for making the same color. These different processes are too complicated to permit of describing them in detail. In general the processes consist of oxidation, filtration, sulfination, nitration, reduction, distillation, chlorination, mixing, salting out, washing, grinding, and packing.

The wastes resulting from these processes consist principally of wash water and waste water from the filter presses. These wastes contain salt solutions such as solutions of sodium chloride and sodium sulphate, together with various dyes or coloring matter in solution and suspension. These wastes as they leave the plants, are usually highly colored and very greatly in shades depending on the predominating color manufactured and the degree of dilution of the wastes before discharge. They are however, practically free from coal tar or oils and contain only a small amount of suspended matter.

In some cases these wastes are passed through settling tanks or disposed of in cesspools but in most cases they are disposed of without treatment. In the former cases there is no appreciable pollution and in the latter cases the color rapidly diminishes as they mix with the waters into which they are discharged and become dispersed and diluted.

CRUDE OIL REFINERIES.

In crude petroleum oil refineries the crude oil is distilled by fractional distillation in large stills where the lighter oils are first taken off and then by successive steps the heavier oils, until a so-called tar remains. This tar is distilled further in some cases to take off the paraffin. The distillation is continued until all oils are driven off leaving what is known as a dry coke which resembles the ordinary coal gas coek. The oil distillates, except paraffin oil, are subsequently treated with sulphuric acid and washed with water. Some grades of oil are filtered through fuller's earth. The paraffin oil or wax is treated with sulphuric acid and agitated in "agitators" after which it goes to a pressing plant where it is first filtered to separate the oil from the wax and then chilled by refrigeration. The tar resulting from this latter process is also treated with sulphuric acid and washed with water.

The liquid wastes from oil refineries consist of oily wash water from the washings of the oils, tar, and sludge acid. This water is collected in settling tanks where the oil is separated from the water by gravity. The oil which rises to the top is skimmed off and the remaining water, which contains only traces of oil, is discharged into the nearest water course. The sediment which settles to the bottom of the settling tanks is removed, mixed with ashes and used for filling in low ground.

Small patches of light irridescent oil were observed at and in the vicinity of the outlets. In most cases however, the effect of the discharge could not be observed beyond these points.

The results of the individual inspection of these plants will now be presented. Owing to the considerable number of plants involved and in order to present the results in a concise and readily comparable manner the information contained will be presented in tabular form covering essential information which will have a direct or indirect bearing upon the question of wastes produced.

Table I covers gas manufacturing plants subdivided under the headings of water-gas manufacturing plants and coal-gas manufacturing plants, Table II coal-tar products plants, Table III aniline dye works, and Table IV oil refineries.

In Table I, covering gas manufacturing plants, column 1 gives the number of the plant as assigned in the work of the inspection; column 2, the name and the location

of the plant; column 3, the number of employees; column 4, the amount of gas produced per day in cubic feet; column 5, the coal consumption per day in the generators; column 6 indicates whether the scrubber is a wet scrubber or a dry scrubber system; column 7 whether a return system for reuse of gas liquor is employed; column 8, whether the wastes containing coal tar and oil are passed through a separator or settling tank for recovery of these materials; column 9, whether a filter is used for filtering out the oil from the gas liquor discharged; column 10 gives the amount of tar recovered per day; column 11, the estimated approximate quantity of tar and oil wastes discharged per day into streams; column 12, the limiting distances from outlet at which objectionable pollution is noticeable; and column 13, the limiting distance from outlet at which any pollution was traceable.

In Table II, covering coal tar by-products plants, column 1 gives the number of the plant; column 2, the name and location of the plant; column 3, the number of employees; column 4, the product manufactured; column 5, the amount and nature of wastes; column 6, treatment of wastes; column 7, the point of discharge; column 8, the limiting distance from outlet at which objectionable pollution was noticeable; and column 9, the limiting distance from outlet at which any pollution was traceable.

In Table III, covering aniline dye works, column 1 gives the number of the plant; column 2, the name and location of the plant; column 3, the number of employees; column 4, the kind and quantity of the products manufactured; column 5, the water consumption at the plant; column 6, the estimated approximate amount and nature of wastes discharged per day; column 7, the treatment of wastes; column 8, point of discharge of wastes; column 9, the limiting distance from outlet at which objectionable pollution was noticeable; and column 10, the limiting distance from outlet at which any pollution was traceable.

In Table IV covering oil refineries, column 1 gives the number of the plant; column 2, the name and location of the plant; column 3, the number of employees; column 4, the products manufactured; column 5 the nature of waste products; column 6, treatment of wastes; column 7, effect of discharge of wastes; column 8, the limiting distance from outlet at which objectionable pollution was noticeable; and column 9, the limiting distance from outlet at which any pollution was traceable.

TABLE I.

WATER GAS MANUFACTURING PLANTS.

(1) No.	(2) Name and location of manufactory.	(3) Employees.	(4) Gas produced per day.	(5) Coal consumption per day.	(6) Scrubber.	(7) Return system.	(8) Separator or settling tank.	(9) Filter.	(10) Gas tar recovered per day.	(11) Estimated approximate quantity coal tar and oil wastes discharged per day into streams.	(12) Limiting distance from outlet objectionable pollution noticeable.	(13) Limiting distance from outlet any pollution traceable.
			Cubic feet.						*Gallons.*	*Gallons.*		
1	Adirondack Light & Power Co., Saratoga Springs.	7	167,000	Unknown.....	Wet.....	Yes.....	2	Excelsior .	82	500	Discharge into sewer	
2	Half Moon Heat, Light & Power Co., Mechanicsville.	6	50,000	2,500 pounds..	...do.....	No.....	(1)	None.....	(1)	6,000	¼ mile.....	¼ mile.
3	Cohoes Power & Light Corporation, Cohoes.	9	300,000	12,000 pounds.	...do.....	No.....	1	...do.....	(2)	15,000	1 mile.....	8 miles.
4	Troy Gas Co., Troy.....	22	1,250,000	Unknown.....	None.....	No.....	3	...do.....	400	20,000	300 feet.....	500 feet.
5	Rome Gas, Electric Light & Power Co., Rome.[3]	14	100,000	3 tons (coke)..	Wet.....	No.....	2	Coke.....	60	8,000	10 feet.....	50 feet.
6	Utica Gas & Electric Co., Utica.	40	2,400,000	35–40 tons.....	None.....	Yes.....	1	None.....	(4)	(4)	500 feet.....	(4).
7	Fort Plain Gas & Electric Heat, Light & Power Co., Fort Plain.	3	5,000–6,000	½ ton.....	Dry.....	No.....	(1)	...do.....	(1)	1,000	300 feet.....	700 feet.
8	Fulton County Gas & Electric Co., Gloversville.	9	575,000	10–11 tons.....	None.....	Yes.....	1	...do.....	150	(4)	300 feet.....	700 feet.
9	Chuctanunda Gas & Light Co., Amsterdam.	11	200,000	6 tons (coke)..	Wet.....	No.....	1	...do.....	100	10,000	¼ mile.....	1 mile.
10	Mohawk Gas Co., Schenectady.[3]	45	500,000	12 tons (coke)..	...do.....	Yes.....	2	Coke.....	(4)	500	5 feet.....	25 feet.
11	Albany Southern R. R. Co., Rensselaer.	11	100,000	2 tons.....	No.....	No.....	1	None.....	30	9,000	1,000 feet.....	½ mile.
12	Municipal Gas Co., Albany..	35	1,730,000	30 tons.....	Dry.....	Yes.....	2	Shaving...	1,470	4,000	Discharge in sewer..	
13	Albany Southern R. R. Co., Hudson.	5	80,000	4,500 pounds..	2 dry 2 wet.	No.....	1	None.....	30	2,000	½ mile.....	1 mile.
14	Kingston Gas & Electric Co., Kingston.[3]	25	200,000	7,000 pounds (coke).	Wet.....	Yes.....	1	...do.....	100	(4)	Filters into ground..	
15	Central Hudson Gas & Elec. Co., Poughkeepsie.	9	600,000	12–15 tons.....	...do.....	Yes.....	1	...do.....	(4)	(4)	.....do.....	
16	Southern Dutchess Gas Manufacturing Co., Beacon.	3	75,000	1½ tons.....	Dry.....	Yes.....	(5)	...do.....	10	(4)	Discharge into sewer	

17	Central Gas & Electric Co., Newburgh.	8	500,000	6–8 tons (coke)	...do.....	Yes.....	1	...do.....	200	(4)	.....do.....		
18	Peekskill Lighting & R. R. Co., Peekskill.	5	171,000	3–2 tons.....	Wet.....	Yes.....	1	...do.....	25–30	(4)	50 feet.....	100 feet.	
19	Northern Westchester Lighting Co., Ossining.	11	195,000	4.3 tons.....	Dry.....	Yes.....	1	...do.....	(4)	(4)	500.....	500.	
20	West Shore Gas Co., Haverstraw.	2	40,000	1,500 pounds..	...do.....	No.....	(1)	...do.....	6–7	4,000	300.....	Flows through swamp drain	
21	Orange County Public Service Corporation, Middletown.	4	160,000	78,000 pounds.	None.....	No.....	1	...do.....	(4)	16,000	100.....	100.	
22	Suffern Gas Co., Suffern.....	4	17,000	¾ ton.....	Wet.....	No.....	1	...do.....	(4)	1,600	Filters into ground..		
23	Rockland Light & Power Co., Nyack.	9	120,000	1.7 tons.....	...do.....	No.....	1	Cinder....	(4)	12,000	.....		
	Westchester Lighting Co.:												
24	Tarrytown.....	18	700,000	10 tons.....	...do.....	Yes.....	1	3 (coke and sand).	(4)	(6)	.....		
25	Yonkers.....	40	1,500,000	27 tons.....	...do.....	Yes.....	1	None.....	(4)	(6)	.....		
26	Pelham.....	75	4,000,000	150 tons.....	...do.....	Yes.....	2	...do.....	(4)	(6)	.....		
27	Central Union Gas Co., 908 East One hundred and thirty-eighth Street, New York.	220	5,500,000	(4)	Dry.....	Yes.....	1	...do.....	5,750	12,000	50 feet.....	50 feet.	
28	Consolidated Gas Co., Ninety-ninth Street and First Avenue, New York.[7]	55	3,500,000	(4)	...do.....	Yes.....	1	...do.....	2,450	7,200	25 feet.....	25 feet.	
29	Standard Gas Light Co., One hundred and fifteenth Street and East River, New York.	95	6,000,000	(4)	...do.....	Yes.....	5	...do.....	3,500	(4)	50 feet.....	50 feet.	
30	Consolidated Gas Co., Twenty-first Street near East River, New York.	200	20,000,000	(4)	...do.....	Yes.....	5	...do.....	14,000	36,000	100 feet.....	150 feet.	
31	Mutual Gas Co., Eleventh Street and Avenue D, Brooklyn.	140	8,900,000	(4)	...do.....	Yes.....	3	...do.....	5,000	(4)	Not noticeable.....	None.	
32	Consolidated Gas Co., Astoria Plant, Queens.[7]	750	17,000,000	(4)	...do.....	Yes.....	2	...do.....	12,000	(4)	200 feet.....	500 feet.	
33	New Amsterdam Gas Co., Webster Street, Brooklyn.	250	12,000,000	(4)	...do.....	Yes.....	4	...do.....	8,400	(4)	Discharged into sewer.		
	Brooklyn Union Gas Co.:												
34	Equity Plant, Brooklyn.	30	939,000	(4)	...do.....	Yes.....	2	...do.....	660	(4)	.....do.....		
35	Williamsbridge Plant, Brooklyn.	170	13,786,000	(4)	...do.....	Yes.....	2	...do.....	9,650	(4)	200 feet.....	300 feet.	
36	Citizens' Gas Co., Fifth and White Streets, Brooklyn.	125	6,000,000	(4)	...do.....	Yes.....	2	...do.....	4,375	(4)	.....		

[1] None.
[2] None at present.
[3] The wastes from this plant contain no tar or oil.
[4] Unknown.
[5] Use relief holder.
[6] No overflow.
[7] Coal gas also manufactured; see table below.

TABLE I—Continued.

WATER GAS MANUFACTURING PLANTS—Continued.

(1) No.	(2) Name and location of manufactory.	(3) Employees.	(4) Gas produced per day.	(5) Coal consumption per day.	(6) Scrubber.	(7) Return system.	(8) Separator or settling tank.	(9) Filter.	(10) Gas tar recovered per day.	(11) Estimated approximate quantity coal tar and oil wastes discharged per day into streams.	(12) Limiting distance from outlet objectionable pollution noticeable.	(13) Limiting distance from outlet any pollution traceable.
			Cubic feet.						*Gallons.*	*Gallons.*		
37	Kings County Lighting Co., Fifty-fifth Street and First Avenue, Brooklyn.	75	4,500,000	75 tons	Dry	Yes	1	None	400	(4)	Filters into ground	
	Brooklyn Union Gas Co.:											
38	Metropolitan Plant, Brooklyn.	160	12,922,000	(8)	do	Yes	1	do	9,000	(4)	Not noticeable	25 feet.
39	Fulton Plant, Brooklyn.	120	6,500,000	(8)	do	Yes	2	do	4,550	(4)	200 feet	300 feet.
40	Nassau Plant, Brooklyn.	160	11,370,000	(5)	do	Yes	4	do	8,000	1,200	(4)	None.
41	Brooklyn Borough Gas Co., Coney Island.	23	2,000,000	(8)	do	Yes	2	do	1,500	None		
42	Queensborough Gas & Electric Co., Rockaway Park.	25	2,500,000	90,000 pounds	Wet	Yes	1	Sand and coke.	625	15,000	25 feet	100 feet.
43	New York & Richmond Gas Co., Clifton, Staten Island.	31	1,800,000	63,000 pounds	do	Yes	1	None	900	(4)	(4)	(4).

COAL-GAS MANUFACTURING PLANTS.

1	Glens Falls Gas & Electric Light Co., Glens Falls.	35	300,000	30 ton	2 wet	No	1	None	150	3,000	½ mile	2½ miles.
2	Rome Gas, Electric Light & Power Co., Rome.[8 9]	14	350,000	32 ton	Wet	No	2	Coke	350	(4)		25.
3	Chuctanunda Gas Light Co., Amsterdam.[8]	12	175,000	16 ton	do	No	1	None	15	15,000	½ mile	1 mile.
4	Mohawk Gas Co., Schenectady.[9]	45	1,000,000	75 ton	do	No	2	Coke	1,200			
5	Kingston Gas & Electric Co., Kingston.	25	160,000	14 ton	do	Yes	1	None	175	(4)	Filters into ground	
6	Upper Hudson Electric R. R. Co., Catskill.	5	27,500	7,000 pounds	do	No	1	do	40	(4)	do	

7	Saugerties Gas Co., Saugerties.	5	55,000	5 ton	...do	No.	1	...do	50	6,000	.....do	
8	Goshen Illuminating Co., Goshen.	3	20,000	2 ton	Dry	No.	1	...do	3	360		
9	Central Union Gas Co., 908 East One hundred and thirty-eighth Street, New York.[8 9]	320	1,900,000	?	...do	No.	1	...do	2,550	(4)	50 feet	50 feet.
10	Consolidated Gas Co., Astoria Plant, Queens.[8 9]	750	8,500,000	?	...do	No.	2	...do	(4)	(4)	200 feet	500 feet.

[4] Unknown.

[8] Water gas also manufactured; see table above.

[9] Recover ammonia from the gas liquor.

TABLE II.

COAL-TAR PRODUCTS PLANTS.

(1) No.	(2) Name and location of plant.	(3) Employees.	(4) Products.	(5) Amount and nature of wastes.	(6) Treatment of wastes.	(7) Point of discharge.	(8) Limiting distance from outlet objectionable pollution noticeable.	(9) Limiting distance from outlet any pollution traceable.
1	The Barrett Co., Smith Street, Brooklyn.	150	Tar paper and coal-tar oils.	200 gallons per day from separating pan; drainage from pipe trench.	Separating-pan wastes passed through three settling basins operated in series; drainage from pipe trench into Gowanus Canal.	Effluent from settling basins into city sewer; drainage from pipe trench into Gowanus Canal opposite plant.	Can not be determined in case of settling-tank wastes; 25 feet.	200 feet.

TABLE III.

ANILINE DYE WORKS.

(1) No.	(2) Name and location of works.	(3) Employees.	(4) Products.	(5) Water consumption.	(6) Amount and nature of wastes.[1]	(7) Treatment of wastes.	(8) Point of discharge.	(9) Limiting distance from outlet objectionable pollution noticeable.	(10) Limiting distance from outlet any pollution traceable.
1	National Aniline & Chemical Co., Ditmars Avenue and East Eighty-third Street, Brooklyn.	450-500	20 different aniline colors and dyes.	1,000,000 gallons per day.	450,000 gallons condenser water; 500,000 gallons from filter presses; 50,000 gallons domestic sewage.	No treatment.	Through private sewer into head of Paerdegat Basin.	1,000 feet.....	4,000 feet.
2	Pfeiffer Color & Chemical Co., 27-35 Bridge Street, Brooklyn.	25	500 pounds Prussian dye; 50 pounds carmine, 2,500 pounds Paris green, 500 pounds greenish vermilion.	.....	Condenser water and wash water.	.....do.....	City sewer.....	No pollution found.	
3	J. S. & W. R. Eakins (Inc.), Wallabout Avenue west of Classon Street, Brooklyn.	40	Insoluble chrome yellow, insoluble green, scarlet lake colors.	.....	.....do.....	.....do.....	.....do.....	.....do.....	
4	Zobel Color Works, 101 Ninth Street, Brooklyn.	30	700 pounds methyl violet.	3,000 gallons daily.	500 pounds copper sulphate sludge after filtration carried away, 2,000 gallons waste water containing salt and copper chloride.	.....do.....	Through open ditch to canal.	50 feet.....	50 feet.
5	Holliday Kemp Co. (Inc.), Betts Avenue, Brooklyn.	30	600-800 pounds aniline dyes per day.	4,000 gallons daily.	4,000 gallons wash water daily.	3 cesspools overflowing into brook.	1,000 feet below plant..	Not objectionable.	Do.
6	Harmon Color Works, First Street and Second Avenue, College Point, Queens.	11	3,000 pounds of dry colors per day.	20,000 gallons daily.	20,000 gallons colored wash water daily.	None.....	East River, near works.	25 feet.....	Do.
7	Dicks, David Co., Maple Avenue, Rosebank, Staten Island.	10	700-800 pounds of methyl violet.	15,000 gallons daily.	15,000 gallons wash water daily.	Settling tank..	Through public sewer into lower bay.	Could not determine.	Could not determine.
8	G. Siegle Co., Chestnut Avenue, Rosebank, Staten Island.	75	1,000,000 pounds per year of lake and pigment colors.	25,000 gallons daily.	25,000 gallons wash water per day.	No treatment.	.....do.....	.....do.....	Do.

9	Croton Color & Chemical Co., Post Road, Croton.	8	4,500 pounds daily of azo colors.	1,500 gallons daily.	1,500 gallons wash water daily.	Cesspool.....	Cesspool overflows into Hudson River, near plant.	No overflow from cesspool at the time of the inspection.

[1] The wastes from these plants contain no tar or oil.

TABLE IV.

CRUDE OIL REFINERIES.

(1) No.	(2) Name and location of plant.	(3) Employees.	(4) Products manufactured	(5) Nature of wastes.	(6) Treatment of wastes.	(7) Effect of discharge of wastes.	(8) Limiting distance from outlet objectionable pollution noticeable.	(9) Limiting distance from outlet any pollution traceable.
	Standard Oil Co.:							
1	Devoe Works, Tenth Street, Long Island City, near East River.	1,100	Light and heavy oils.	Wash waters containing oil and tar; condenser water; sanitary sewage.	Settling tank; 2 separators.	Small patches of iridescent oil on surface of canal.	Not objectionable.	Few feet; effect masked by other wastes.
2	Pratt Works, North Twelfth Street, Brooklyn, near East River.	175	Naptho, road oils, fuel oils.	.....do.....	Two separators..	Negligible.....	.....do.....	Effect masked by other wastes.
3	Fleming Works, Kingsland and Greenpoint Avenue, Brooklyn.	750–800	Light and heavy oils.	.....do.....	.....do.....	Small patches of iridescent oil on surface of canal.	.....do.....	50–100 feet; effect masked by other wastes.
4	Review Avenue and Pine Street, Queens.	500	Paraffin oils, wax	.....do.....	.....do.....	.....do.....	.....do.....	10–20 feet; effect masked by other wastes.

With reference first to gas-manufacturing plants, it will be seen from the table that some 43 plants which are now operating use the water-gas process and some 10 plants use the coal-gas process. It will also be observed that of the water-gas plants all but some 12 use the return system from which substantially no oil or tar wastes are discharged into these waters, and that 5 of the 10 coal-gas plants utilize the gas liquor for the securing of ammonia and therefore also do not discharge oil wastes into these waters.

From these 12 water-gas plants and the remaining 5 of the gas plants, oil and tar wastes were being discharged to a greater or less extent. In only 2 of these 17 cases, however, namely, the plant of the Glens Falls Gas & Electric Light Co., at Glens Falls, and the plant of the Cohoes Power & Light Corporation, at Cohoes, were these wastes being discharged in such appreciable amounts as to cause any objectionable conditions beyond the immediate vicinity.

It will be observed that these last-named plants are upon the upper reaches of the Hudson River, and that while these plants are sources of nuisances and have caused some objectionable conditions locally, especially in the case of the plant of the Cohoes Power & Light Corporation which has at times affected objectionably the water as far as Albany, some 8 miles below, there is no evidence whatever to indicate that the wastes from these two plants produce objectionable conditions for any considerable distance below the city of Albany, and certainly not as far as New York City.

It is obvious, therefore, that the discharge of wastes from none of these gas plants could have been responsible for the objectionable conditions complained of on the water in the vicinity of New York City.

With reference to the one plant of the Barrett Manufacturing Co. included in Table II it will be observed that the wastes from the various processes within the plant were small in accounts and were effectively treated in tanks for the removal and recovery of tar and oil and then discharged into the city sewerage system. The yard drainage containing slight oil wastes were discharged directly into Gowanus Canal, but the effect of discharge of these wastes was very slight and not noticeable beyond a distance of 200 feet.

With reference to Table III, covering aniline dye works, it will be noted that the wastes from none of these plants contain tar and oil, and that, although the wastes at the point of discharge are highly colored, they contain very little suspended matter and after dilution and dispersion in the waters into which they are discharged, the effects generally were not, with the exception of one plant, that of the National Aniline & Chemical Co., noticeable beyond a few feet from the outfalls. In the case of the National Aniline & Chemical Co. the color was somewhat more intense at the outlet and was traceable for a distance of nearly a mile. No oil or tar wastes were observed coming from this plant.

With reference to Table IV, covering oil refineries, it appears that there are only four of these plants and that in all of them any oil wastes that are produced are treated in settling tanks or separators for the recovery of oils. Slight traces of oils, however, escape with the effluent from these settling tanks or separators, but these residual oil wastes are in all cases practically negligible in amounts and their effect after discharge extends only a few feet from the outfalls.

It will be observed, therefore, in viewing these 67 plants as a whole that from only two plants were there any wastes which could have any appreciable effect on the pollution of New York Harbor and Jamaica Bay, namely, the Astoria Light, Heat & Power Co. and the National Aniline & Chemical Co. From our observations, however, it is clear that this pollution could not be responsible for the objectionable and injurious effects alleged in the complaints.

While the results of our investigation indicated clearly that the plants involved in your order are not responsible for any such conditions alleged by the complainant, our observations, previously referred to, of the conditions along the bathing beaches and at various points in the bays, and particularly our inspection of the "oil sleek" field inspected near South Beach, showed clearly that a very serious, objectionable, and injurious nuisance was created by oil wastes discharged from some source or sources not referred to in your order. It was learned from the superintendents of certain beaches that on a number of occasions, the dates of which were recorded, "oil sleek" fields drifted in against the beaches and created such objectionable conditions as to make bathing almost prohibitive. Those who did venture in found it necessary in most cases to remove the oil from their bodies with kerosene. The "oil sleek" field inspected by our engineer on August 23 on South Beach was a number of square miles in area. This oil field, consisting of a thick film of oil floating upon the surface of the water, was dark colored and, judging from its appearance and from laboratory tests, consisted principally or wholly of crude petroleum oil. It floated along and against the shores of the beach, saturating the surface of the sand and pol-

luting the water in an unsightly and offensive manner. In fact, there can be no doubt whatever that the presence of these fields of "oil sleek" in the harbor and along the beaches, when these fields are drifted in by tides and winds, produce objectionable conditions which can only be characterized as an intolerable nuisance, injuriously affecting bathing and yachting, and damaging property in and along the shores of these waters.

Although no definite or conclusive evidence was obtained as to the specific source or sources of these objectionable oil wastes, nor any extended investigation made to determine the sources in view of the limited time available and the specific instruction in your order which did not cover such an investigation, there is ample evidence to indicate that these wastes come from sunken or plying tank steamers which carried or now carry crude oil from Mexican and other oil fields. Whether these oil wastes were derived exclusively from these sources or whether they were contributed to by industrial plants handling crude and refined oils and situated largely in the State of New Jersey, is also a question upon which no conclusive information was secured.

In view of the foregoing and as a result of this investigation, I beg to submit the following conclusions:

1. That of the 67 plants engaged in the manufacture or production of coal-tar or aniline by-products or waste, including gas works, from only 8 plants, namely, the plants of the Astoria Light, Heat & Power Co., the National Aniline & Chemical Co., the Glens Falls Gas & Electric Light Co., the Half Moon Heat, Light & Power Co. at Mechanicville, the Cohoes Power & Light Corporation, the Chuctanunda Gas Light Co. at Amsterdam, the Albany & Southern Railroad Co. at Rensselaer, and the Albany & Southern Railroad Co. at Hudson, were any appreciable quantities of oil and tar wastes or dye wastes discharged into the waters of New York Bay, Jamaica Bay and their tributaries.

2. That of these plants so discharging said wastes into said waters, in only four cases, namely, the plants of the Astoria Light, Heat & Power Co., the National Aniline & Chemical, Co. the Glens Falls Gas & Electric Light Co., and the Cohoes Power & Light Corporation, were there wastes discharged in such quantities and under such conditions as to cause objectionable conditions; and in these latter cases the objectionable conditions noted were principally limited to the immediate vicinity of the plants.

3. That none of the plants referred to in your order and covered by the investigation were to any appreciable extent responsible for the objectionable oil pollution of the waters of New York Bay and Jamaica Bay alleged by the complainant and corroborated by observation made during this investigation.

4. That a serious nuisance is created in and around the waters of New York Bay and Jamaica Bay from certain oil wastes discharged into these waters from sources other than the plants referred to in your order, which seriously and injuriously affect bathing beaches, and yachting, and cause damage to property in and around these waters.

5. That although it is not possible at the present time, with the information now available, to assign conclusively the definite source or sources of the nuisance so created, what information was obtained would indicate that it is treacable largely, if not wholly, to the oil tankers which transport crude and refined oil to and from ports in the vicinity of New York Harbor, or from industrial plants handling these oils.

Respectfully submitted.

HERMAN M. BIGGS, M. D.,
State Commissioner of Health.

STATE OF NEW YORK,
DEPARTMENT OF HEALTH,
Albany, September 26, 1919.

HERMANN M. BIGGS, M. D.,
State Commissioner of Health, Albany, N. Y.

DEAR SIR: I beg to submit the following report on our further investigation of the pollution of the waters of New York Harbor and Jamaica Bay and their tributaries by the discharge of oil wastes referred to in your report to Gov. Smith of August 30, 1919.

In your report to the governor you will recall that the sources of the oil wastes complained of were found to be due not to the manufacturing plants engaged in the manufacture or production of coal tar and aniline by-products or wastes as alleged, and that although the exact sources of the oil wastes were not definitely found, information obtained from the investigation indicated that oil tankers and industrial

plants handling crude and refined oil were largely if not wholly responsible. In order to throw more light on the subject and determine more definitely the sources of these oil wastes you directed me to make a further investigation with this end in view. The results and findings of our previous investigation are fully set forth in your report to the governor and will therefore not be reviewed in any detail at this time.

Our further investigation covered a period of nine days, from September 5 to September 13, 1919, inclusive. The field work was carried on by one assistant engineer and one inspecting engineer and in large measure with the assistance and cooperation of the United States supervisor of the harbor of New York. Detailed inspections were made of five petroleum oil refineries, three petroleum oil storage and shipping plants, and two asphalt plants, all of which are located in the State of New Jersey and include the refineries of the Standard Oil Co., at Claremont, Bayonne, and Bay Way; the refineries of the Tide Water Oil Co., and the Vacuum Oil Co., at Bayonne; the oil storage and shipping stations of the Texas Co.and the Gulf Refining Co., at Bayonne, and the Mexican Petroleum Corporation near Carteret; and the asphalt plants of the Warner-Quinland Asphalt Co. near Carteret, and the Barber Asphalt Co., near Perth Amboy.

The main offices of these companies and the office of the United States Shipping Board were also visited and information secured in reference to the operation of the factories and pipe lines and the number, movements, and operations of oil tankers owned and operated by these concerns. Two days were spent in one of the patrol boats of the United States supervisor of the harbor of New York in company with one of his inspectors, inspecting the waters of New York Harbor, Kill Van Kull, and the Arthur Kill and examining the outlets from the plants engaged in the handling or refining of petroleum oil on the shores of these waters in the vicinity of New York City. Conferences were also held with the United States supervisor of the harbor of New York and data obtained as to the jurisdiction of his department and the means at his disposal for detecting violations and enforcing the law with respect to the discharge of or depositing of wastes in the waters of New York Harbor and its tributaries.

In connection with the inspection of the refineries, oil storage and shipping stations and the asphalt plants referred to, a detailed examination of each plant was made with special reference to the disposal and treatment of its oil wastes. It was found that with one exception, namely, the plant of the Warner-Quinland Asphalt Co., all of these plants have so-called separators through which oily liquid wastes are passed and where the oil is separated from the water by flotation. The oil which comes to the surface of these separators is skimmed off and utilized. Although these separators seemed to be fairly efficient in removing most of the oil from the wastes a small amount of oil does, however, escape through the outlets of these separators with the waste water. The oil that thus escapes collects on the surface of the water, in the slips and in the corners of the docks of the various plants and under certain conditions of tide and wind is carried out into the harbor and its tributaries. This oil could be traced for limited distances below the various plants before it becomes dissipated.

In the case of the plant of the Warner-Quinland Asphalt Co. on the westerly shore of the Arthur Kill near Carteret no attempt appears to be made at the present time to recover the oil discharged with the wastes from the plant. Although a small separator divided into two compartments, 8 feet square and 4 feet deep each, formerly used for the treatment of a portion of the wastes was found in the plant this separator had been abandoned and was not in operation at the time of the inspection. The oil, water, and sediment which collects on the bottom of the blow-off tanks is discharged intermittently, and directly onto the surface of the ground near these tanks and flow into ditches leading to the Arthur Kill. The condensed steam which results from the blowing of live steam through the oil in the process of manufacturing asphalt and the water used for washing oil are discharged almost continuously into a meadow on the northerly side of the plant from which it flows into a ditch leading to the Arthur Kill.

The oil and waste discharged from this plant either directly or indirectly were obviously much greater than those discharged from any of the other plants inspected and could be traced to considerably greater distances. As the result of tidal and wind action the oil spread out upon the water in sheets or patches of considerable size and the shores on both sides of the Arthur Kill above and below the plant were polluted by black oil. In fact this condition results not only in the creation of a local nuisance at this point but also undoubtedly contributes to an appreciable extent to the pollution of New York Harbor and its tributaries and is a condition that should be corrected. It is unlikely, however, that it was in any great measure individually responsible for the gross and objectionable pollution of bathing beaches referred to by the complainants.

From conferences with the officials of the different oil companies whose plants are located on the shores of New York Harbor and its tributaries in Greater New York and New Jersey, it was learned that these companies own and operate some 140 tankers having capacities of from 20,000 to 100,000 barrels each, nearly all of which ply between the port of New York and foreign and other domestic ports. This does not include 41 oil tankers owned by the United States Shipping Board which are used for the transportation of crude and fuel oil to and from New York Harbor and for the bunkering of United States naval vessels and merchant vessels of the United States Shipping Board. By December 1st of this year it is expected that the United States Shipping Board will have 70 oil tankers in operation. There are also some 45 or 50 smaller tankers or lighters having capacities of from 2,000 to 15,000 barrels of oil each, used for the transportation of oil to and from various part of New York Harbor by the various oil companies. It was also learned that the movement of oil to and from New York Harbor has increased from 300 to 400 per cent within the last five years. During July and August of this year about 60 tankers owned by private oil companies arrived in New York Harbor either with oil or ballast and some 45 tankers departed from New York Harbor carrying oil or ballast, not including the arrival and departure of tankers owned by the United States Shipping Board.

From the data obtained regarding the operation of oil tankers it was found that these tankers contribute to the pollution of New York Harbor and its tributaries in a number of ways, such as by the pumping out of oil with ballast; the pumping out of so-called slops in the cleaning of the tankers prior to sending them to dry docks for repairs and when changing from one class of oil cargo to another; and from the spilling of oil in pumping out the cargoes at the docks or into lighters.

With respect to the pollution of New York Harbor by the pumping out of ballast it was found that many of the tankers which leave New York Harbor loaded with oil return with ballast consisting of sea water. This ballast contains considerable residual oil which was stated to be in some cases as much as 300 barrels per tanker, handling crude or fuel oil, which it has been impracticable to pump out in the unloading of the cargo of oil at the destination of the tanker. This is due to the arrangement of the pumping and piping equipment of most of the tankers. Although this oil in the tankers floats on the surface of the water when conditions are quiescent, it is obvious that when the ballast is pumped out and the water is agitated by the pumping, a large part of this oil escapes with the last water pumped out.

It was claimed that the captains and masters of the tankers have orders to pump out this ballast at sea before entering the harbor, but it appears that these instructions are not always carried out. Furthermore, it is found that in a few instances the construction of the tankers is such as not to permit of pumping out the ballast before the tankers reach the dock and that during rough weather or in times of storm it would not be safe to pump out all of the ballast before entering the harbor. It was learned also that many if not most of the tankers pump out the last portion of the ballast into the lower bay between Sandy Hook and the quarantine station near Stapleton.

With respect to the pollution caused by the pumping out of so-called slops, it was found that when a tanker is put into dry dock for repairs, which is done about once a year, or when changing from one class of oil cargo to another, the various tanks or compartments are steamed out and washed down with hot water. The resulting mixture of oil and water is called "slops." It was claimed that in the cases of companies that have refineries in the district, these slops are pumped from the tanker into slop tanks on shore, or into lighters in the harbor which transport the slops to such slop tanks. The oil from these slop tanks is recovered and refined. A certain amount of oil from these operations, however, finds its way into the harbor. This is particularly so in the case of companies which operate tankers, but have no refineries in the district, such as the Mexican Petroleum Corporation, the Texas Co., and the Gulf Refining Co.

With respect to the pollution of the harbor from the spilling of oil in pumping out the cargoes of oil at the docks or into lighters in the harbor it was found that the oil from the tankers when they arrive is either pumped directly into storage tanks on shore or into lighters in the harbor from which the oil is transferred to these storage tanks, or, in some cases, into other vessels. From these processes a considerable amount of oil is also lost overboard. In the case of one plant holds were found in the dock under the pump connections which allowed oil to escape into the harbor when the pipes are disconnected.

An additional source of oil pollution was found from our investigation to be caused by the occasional discharge of oil from the accidental breaking of oil pipe lines. It was learned that one of the pipe lines crossing North River was broken some time ago by the anchor of a battleship and that an oil pipe line in Newark Bay was broken by a tug boat which anchored over it. The discharge of oil into the harbor due to breaking

of the pipe lines probably does not occur very often, but when it does occur large quantities of oil escape due to the compararively great length and large size of these pipes and the pressure under which they are operated. These breaks, however, can be readily detected and quickly stopped as soon as discovered, and the pipe lines are constantly patrolled by the oil companies so that it is not likely that they are responsible for the gross and objectionable pollution complained of.

It was learned from conferences with the United States supervisor of the harbor of New York that under a law of Congress entitled "An act to prevent obstructive and injurious deposits within the harbor and adjacent waters of New York City, by dumping or otherwise, and to punish and prevent such offenses," enacted June 29, 1888, and amendments thereto enacted August 17, 1894, and May 28, 1898, and he has full authority to enforce the provisions of this act and prevent the placing, discharging or depositing of any refuse except sewage and street wash into said waters. Although a number of vessels have been detected by him in the act of pumping oil or oily wastes into New York Harbor within the past year the force at the disposal of the supervisor, however, appears inadequate to effectively patrol the harbor. We were advised that only one small motor boat having a speed of about 6 miles per hour is available for the purpose of detecting cases of violation such as the discharge of oil into the harbor.

It is obvious that more effective patrol is necessary and it would seem that, since only a few tankers arrive in the port of New York each day, it would be advisable to have sufficient patrol boats available to enable the supervisor of the harbor to have one of these boats meet every tanker as it enters the Lower Bay and accompany it to its dock and thereby more effectively prevent the pollution of the New York Harbor and its tributaries by the discharge of oil from these tankers.

In view of the foregoing and as a result of our further investigation, I beg to submit the following conclusions:

1. That there are five petroleum oil refineries, three petroleum oil storage and shipping plants, and two asphalt plants located in New Jersey on the shore of New York Harbor or its tributaries not including the plants inspected at the time of the previous investigation from which some oil escapes into New York Harbor.
2. That although the oil which escapes from these plants undoubtedly contributes somewhat to the pollution of New York Harbor, it is unlikely that it is responsible for other than local nuisances in the vicinity of the plants or that it is responsible to any great extent for the gross and objectionable pollution of the harbor and beaches complained of.
3. That there are other sources of pollution such as from the breaking of pipe lines and the overflowing of oil storage tanks which are accidental in their nature and which there is little evidence to indicate were responsible for the gross and objectionable pollution complained of.
4. That the discharge of the oil from the oil tankers transporting oil to and from New York Harbor and its tributaries is largely responsible for the gross and objectionable pollution of these waters complained of.
5. That the discharge of oil or oily wastes from tankers and other vessels, and from industrial plants, into New York Harbor and its tributaries, is in direct violation of Federal laws relating to the pollution of said waters.
6. That the enforcement of these Federal laws is under the jurisdiction of the United States supervisor of the harbor of New York who has authority to determine and proceed against any violations of these laws.
7. That in order to more adequately and effectively enable said supervisor to enforce these laws he should be provided with additional means for patrolling the harbor and its tributaries.

Respectfully submitted.

THEODORE HORTON,
Chief Engineer.

STATEMENT OF HERBERT JOHNSON, NORTH LONG BRANCH, N. J.

A fisherman, Herbert Johnson, North Long Branch, said he had shad fished up the Hudson River for 14 years. As the oil increased each year the shad decreased until they were compelled to quit.

There was no fresh clear water which shad looks for.

This oil comes in the Shrewsbury River with the flood tide and when the tide recedes it leaves the clam flats bare with the exception of a coat of oil that is destroying the clams, crabs, oysters, and every living thing in the river.

BRIEF SUBMITTED BY THE ASSOCIATION OF NORTH JERSEY SHORE MUNICIPALITIES.

ASSOCIATION OF NORTH JERSEY SHORE MUNICIPALITIES,
October 22, 1921.

Hon. T. FRANK APPLEBY,
House of Representatives, Washington, D. C.

DEAR SIR: This association represents 23 municipalities bordering the northern Jersey shore and is composed of the mayors, other city officials, presidents and members of chambers of commerce and other civic bodies.

The association has gone on record as being unanimously in favor of the House bill, which will make illegal the pollution of navigable waters by refuse oil, etc. The pollution of the waters of our shore here are not only a public nuisance but a great menace to the fish industry along this entire shore front. Refrigerating plants whose business it is to store fish preparatory to shipment to the market report that there are times when their plants are practically empty due to the fact that the only fish available are dead fish which of course are not marketable. This occurrence has been frequent and it is claimed that in time the fishing industry will be annihilated.

We strongly indorse and urge the passage of this measure which will possibly remedy the evil.

Very respectfully, yours,

H. C. REHM, *Secretary.*

COMMUNICATION FROM CAPE MAY COUNTY, N. J., CHAMBER OF COMMERCE.

CAPE MAY COUNTY CHAMBER OF COMMERCE,
OFFICE OF THE SECRETARY,
Sea Isle City, N. J., October 22, 1921.

Hon. FRANK APPLEGATE,
House of Congress, Washington, D. C.

DEAR SIR: The Cape May County Chamber of Commerce, consisting of members from every trade, civic and agricultural organization in Cape May County, N. J., does most earnestly indorse the bill to prohibit ocean steamers discharging used oil, which bill, we understand, will be given a hearing on Tuesday.

Every resort in Cape May County has been annoyed by this surface coating of oil washing in on the breakers, making the beaches unsightly and working havoc with the summer bathers, to the great financial loss of the resorts because of dissatisfaction among the visitors.

By order of the Chamber.

WM. A. HAFFERT,
Secretary.

BRIEF OF M. J. READY, VICE PRESIDENT OF SODERSEINE COMPANY OF NORTH AMERICA, BROOKLYN, N. Y.

SODERSEINE CO. OF NORTH AMERICA,
Brooklyn, N. Y., October 19, 1921.

Hon. T. FRANK APPLEBY,
Washington, D. C.

MY DEAR CONGRESSMAN: Your valued favor of October 10 at hand.

I find it will be impossible for me to attend the hearing before the Committee on Rivers and Harbors in Washington on October 25 next, but desire to file a short brief on the subject.

The following facts may help to enlighten some of the members of the committee as to the situation in and around Raritan Bay, where the writer is financially interested, as a freeholder in Keansburg and Keyport, N. J. I speak for hundreds of property owners, residents of and visitors to both towns.

During said seasons I have seen thousands upon thousands of dead fish floating in the bay and piled upon the beaches. At such times, large surfaces of oil were in evidence all over the bay. The stench from the dead fish, especially on the real hot days, was sickening.

I have on many occasions picked up live sea gulls from the bay waters, which were too weak to fly, and later died. Upon examination, it was evident that the birds did not die of starvation or old age, but from something they had eaten.

I am no expert on sick sea gulls or dead fish, but it is not a great tax on my limited legal ability to prove a direct connection between the two; and by the same token I want to know how in decency's name do you lawmakers expect us humans to stand it, if the sea gulls can't?

Joking aside, the situation in and around New York Bay, Raritan Bay, and adjacent waters is a real menace to health and property.

You lawmakers have the power to relieve the situation. We voters, who put you where you are, ask you to make good.

I have protested in person to the deck hands and owners of the Keansburg Steamboat Line against their throwing overboard oil, ashes, and refuse. The protest was heeded for a while and then reverted to the miserable conditions as formerly.

I have seen oil and ashes being discharged from many ingoing and outgoing steamers, and have written several times to the port authorities in New York City for the information as to the rights of a citizen in attempting to stop the practices. Their answer were indefinite.

Wharves, piles, etc., in the whole area are coated with a heavy oily scum. It is very inflammable, and if it ever gets going by fire, God help New York.

If this needed bill, H. R. 7369, is passed I will supply the names of a hundred citizens in the Raritan Bay vicinity who will gladly give their time and attention gratis to the enforcement.

May we hope for relief? We anxiously await your reply.

Respectfully submitted.

SODERSEINE CO. OF NORTH AMERICA,
M. J. READY, *Vice President and Counsel.*

BRIEF OF CHRISTIAN JOHNSON, GREENWICH, N. J., GROWER AND SHIPPER OF OYSTERS.

CHRISTIAN JOHNSON,
Greenwich, N. J., October 19, 1921.

Hon. T. FRANK APPLEBY,
Washington, D. C.

MY DEAR MR. APPLEBY: Your kind invitation was duly received, and I greatly regret that my other engagements will not permit attendance before the Committee on Rivers and Harbors at the hearing on bill H. R. 7369 on October 25, 1921.

The subject matter of this bill is of vital importance to the floating and shell fish industry of New Jersey.

For more than 20 years last past I have been actively engaged in the business of planting and growing oysters in the tidal waters of Delaware Bay.

As you are no doubt aware, this industry in New Jersey is conducted under the supervision of the State board of shell fisheries, the Delaware Bay district being in charge of the department of the Maurice River Cove.

There are about 50,000 acres of natural oyster beds in Delaware Bay. No person is permitted to take oysters from these beds unless licensed by this department. There are about 250 licensed vessels engaged in the business, giving employment to 1,500 men. From 3,000,000 to 5,000,000 bushels of oysters are taken from these beds annually and are planted on grounds leased from the State in Maurice River Cove. About 27,000 acres are held under lease. Oysters from these leased lands are caught during the fall and early winter months and are shipped in the shell by rail. During the season of 1920–21 about 8,000 carloads were shipped. These cars would average 90 sacks to the car and 900 oysters to the sack, and at the then current market price the value of the oysters shipped was approximately $7,000,000.

There are at least 25,000 acres more of land under water in Maurice River Cove available for lease, and a large area on the western shore of the bay where many oystermen from New Jersey find suitable and profitable planting grounds. Were it not for the fact that the spawning grounds are being gradually destroyed, the Delaware Bay oyster industry could be vastly increased, and a most important and valuable addition be made to the national food supply.

Twenty years ago natural oyster beds abounded over an area in Delaware Bay eight miles further north than they now are. These beds have been destroyed by the action of oil, trade wastes, and other deleterious substances which have found their way into these waters during this period. The spawning ground for millions of seed oysters has been rendered absolutely barren from this cause.

Vessels passing up and down the Bay discharge oil upon the water, and with the acids and other chemicals which come from shore sources, combine to destroy the floating oyster spat or germs.

The oil is also destructive of fish. It ultimately floats to the shore and lodges in the reeds and grasses where the small fish normally feed at high tide. These feeding grounds are thus destroyed. Fifteen years ago sturgeon fishing was a profitable business in these waters. Now only an occasional fish is caught. Ten years ago thousands of shad were caught in Delaware Bay and shipped to market from Bayside, which was a prosperous fishing village. This industry is now gone. Fishermen generally attribute this disappearance of fish from these shores to the pollution of the water.

Unless some remedy can be found, the fish and oyster industry of Delaware Bay will be ultimately destroyed.

The bill which you have introduced meets with my most cordial support and approval, and I sincerely trust that the same may soon become a law. If there is any further information which you desire on the subject, please advise me.

I am sure that I voice the sentiment of hundreds of our oystermen and fishermen in wishing you success in securing the passage of this greatly needed protective measure.

Very truly, yours,

CHRISTIAN JOHNSON.

BRIEF OF SAVANNAH, GA., BOARD OF TRADE.

SAVANNAH BOARD OF TRADE,
Savannah, Ga., October 13, 1921.

Hon. T. FRANK APPLEBY, M. C.,
House of Representatives, Washington, D. C.

DEAR CONGRESSMAN: I wish to thank you sincerely for your kind letter of 6th, regarding the pollution by oil, and have sent the same to the mayor of our city, inasmuch as a committee was appointed by the board of trade to take up this matter, and they reported their recommendations; copy of report I am quoting below:

"Your committee appointed to report on conditions of the harbor of Savannah, relating to the pollution by oil on water and such recommendations as will tend to remedy this evil, met this date (September 30, 1921), at 4 p. m. in the board of trade rooms, and the matter was thoroughly discussed after a report of the National Board of Fire Underwriters' committee on 'fire prevention and engineering standards,' who had made a most thorough investigation of a number of ports on the Atlantic and other seaboards, had been read. I beg to submit herewith findings of the committee:

"*Resolved*, That the board of directors of the Savannah Board of Trade be requested to address a communication to the municipality, requesting that an ordinance be ordained by the city of Savannah similar to that proposed in report of the National Board of Fire Underwriters, embodied in their report of February 18, on 'conditions in the principal harbors of the United States relating to the pollution of oil on water,' said ordinance to be so worded as to meet local conditions of this city."

We would be pleased to be advised of anything further in this regard, and also would like copy of hearing when held.

Yours, truly, THOMAS PURSE, *Secretary.*

STATEMENT OF MR. FRANK F. MAXWELL, NEWSPAPER CORRESPONDENT AND PUBLICIST, AND SECRETARY TO REPRESENTATIVE APPLEBY.

Mr. MAXWELL. Mr. Chairman, may I have just a minute of the committee's time?

Mr. OSBORNE. Certainly. The committee will hear Mr. Maxwell.

Mr. MAXWELL. During this hearing, as I have listened to the testimony of the various witnesses, I have noted references made several times to the desirability of a thorough investigation being made by the Department of Commerce as to the necessity for, and probable scope of legislation to correct this rapidly growing evil of the pollution of our navigable waters. For the information of the committee, as well as the witnesses and interested persons present, I would like to say that on June 16 last a conference was called by the Secretary of Commerce in this city and attended by State fish commissioners, fish producers, and individuals interested in the conservation of our fish and game from the Atlantic and Gulf coasts as well as by Members of Congress and Federal department officials, to consider measures for the prevention and control of water pollution and the protection of our shore fisheries.

Following a more or less exhaustive discussion of the various angles of the problems presented, the following resolution was adopted by the conference:

"Whereas, at the conference of State fish commissioners, fish producers, and anglers of the Atlantic and Gulf coasts, called by the Secretary of Commerce on June 16, 1921, the men from all the States represented gave full consideration to the pollution problems confronting the fisheries and the question of Federal control of fishing operations. The following resolution was unanimously adopted as the concrete expression of the conference: Be it

"*Resolved*, That the pollution of our waters by trade waste of all kinds, raw sewage, and all other substances deleterious to the aquatic life, and particularly oil pollution from the oil stations and refineries and the discharge from small and large oil using and carrying vessels, is the most vital problem generally affecting our fisheries for food fish, shellfish, and crustaceans; and

"*Resolved*, That unless these conditions are promptly remedied our shore fisheries at least will steadily decline and in a few years be almost altogether ruined. We therefore urge immediate work by the Department of Commerce in investigating conditions in the producing districts and the prompt passage of remedial legislation by Congress; and be it further

"*Resolved*, That on the question of general Federal control of the migratory fishes we make the following recommendation:

"That the Department of Commerce call from time to time conferences with the governors of various States in conjunction with the State fish commissioner with the view of suggesting uniform legislation by the various States for the protection of such varieties of migratory fish as may be threatened with extinction through pollution or any other causes."

Mr. MAXWELL. I thought perhaps some of these gentlemen might be interested in that fact. That was held June 16 last.

Mr. TIERNEY. May I offer the suggestion that those resolutions confirm the point that I made? Those were resolutions adopted by the fish commissions of the State, I understand; but they are not supported by any scientific study.

What I mean is this, that there might be some discharge of some manufactories that were not deleterious to fish life. There might be some others that would be.

Now, what I would like to have is a statement, supported by scientific investigation conducted by the Secretary of Commerce, or under his direction, to determine just the degree of contamination that is caused by the various substances that enter into these streams. A law in the light of the information that you have now might be passed, which would do a grave injury to manufactories whose discharge in no way would be injurious. That certainly could not be called a resolution adopted as a result of a scientific investigation.

Mr. MICHAELSON. You do not object to that being made a part of the record, do you?

Mr. TIERNEY. No; but I thought I might have the opportunity to make an observation which I thought was pertinent.

Mr. MICHAELSON. I move, Mr. Chairman, that they be made a part of the record.

Mr. OSBORNE. Yes; without objection, they will be printed in the record.

Representative BLAND of Virginia. May I say, Mr. Chairman, that I think the most careful investigation has been made by the Bureau of Fisheries? That bureau has considerable data on the subject; and Dr. Moore, of the Bureau of Fisheries, is in the room. It seems to me that if the question of pollution is going to be considered in its larger aspects, the summary prepared by the Bureau of Fisheries should be made a part of the record.

Mr. OSBORNE. Do you make that request?

Representative BLAND of Virginia. I make that request. Dr. Moore is in the room.

Mr. OSBORNE. It is a mere matter of putting the matter into the record. Is there any objection to putting this report of the Bureau of Fisheries referred to in the record?

Representative BLAND of Virginia. Dr. Moore, have you that in such shape that it can go into the record?

STATEMENT OF DR. H. F. MOORE, DEPUTY COMMISSIONER BUREAU OF FISHERIES.

Dr. MOORE. Our investigations on this subject are not very complete. We have never had the facilities for carrying on work of this kind. We have rather exact data in regard to certain pollutions, but the number of which we have such data is exceedingly small when you compare it with the number of pollutions which are now being discharged into our streams. It really is a very complex matter, and one that will require years of investigation to complete, even with a considerable force, because you would have to consider not only the intrinsic toxicity of the material

which is discharged, but the reactions of that material to the materials which are already in the water. It is a rather technical matter.

Representative BLAND of Virginia. I am willing to leave the matter to Dr. Moore. If he makes the request, I would like the report to go in; otherwise, not.

Dr. MOORE. We will be very glad to furnish what material we can get together.

Mr. OSBORNE. I understood that it was an individual document of some kind.

Representative BLAND of Virginia. I thought it was completed.

Mr. OSBORNE. But that does not appear to be the case.

Mr. MOORE. No; we have no individual document. We have a document which is now in course of publication, which is a résumé of what is known in regard to pollutions occasioned by petroleum oils and tars. That is not an original investigation, but a summary review of our present knowledge on the subject.

Mr. OSBORNE. Do you think that is desirable?

Representative BLAND of Virginia. I think it would be useful.

Mr. MCDUFFIE. I think we ought to have that.

Mr. OSBORNE. All right.

(The report referred to was subsequently furnished by Dr. Moore, and is as follows:)

DANGER TO FISHERIES FROM OIL AND TAR POLLUTION OF WATERS.[4]

[By J. S. Gutsell, Scientific Assistant United States Bureau of Fisheries.]

Recently the casting of oil on already sorely troubled waters has increased at such a rate, has been accused as the source of so many ills of fishermen and shell fishermen and even of ornithologists, and has become such an obvious nuisance, that a considerable realization of the extent of the contamination and a sense of the possible evil effects have been aroused. So great is the discharge of oils of various sorts that in this country it has been proposed to skim off the oil from some harbor waters and make it available by proper treatment. In Switzerland a patent has been taken out for the recovery of oils from backwaters. It is very desirable, therefore, to present a brief review of the information available regarding the extent and nature of oil and oil-like pollutions with considiration of the possibilities of danger therefrom.

SOURCES OF POLLUTION.

Danger of fatal contamination from the poisonous substances seems to lie chiefly in the gas plants and petroleum distillers, which on one occasion or another, if not regularly, find it convenient to let certain products drain into the nearest body of water; in tankers and oil-engined craft, which are able to use tar, tar oils, and a great variety of petroleum distillates; in oil-burning steamships; and in the washings of oils and tars from roads.

Gas houses and oil refineries are located on all sorts of bodies of water larger than brooks. In smaller streams, and particularly in those inhabited by salmonids, discharges are doubtless frequently fatal to fish life and quite ruinous to the fish value of the water. In larger bodies the actual destruction of fish is apt to be small or incident to exceptional discharges, and the chief harm probably will come from the uninhabitability of the water, especially if this means the rendering unfit of a spawning ground or the forming of a barrier thereto as for salmon or shad.

In streams large enough for steamers, and in all larger bodies of water, there are added to the contributions from gas houses and refineries those from tankers and other ships, and the dangers to fishes from poisoning or coating of gills are correspondingly increased. These larger navigable bodies may be spawning grounds and are almost sure to be gateways to what should be spawning grounds. The danger here, therefore, of keeping fish away from the spawning grounds is far greater than the danger of destruction. It has been charged, but apparently not specifically established, that fish in harbors and the lower stretches of rivers have been killed by the dumping of oil from tankers. All of these vessels must clean out their tanks before they refill them and are prone to do so in harbor or as near there as may be.

Well out at sea and in the larger bays the only source of considerable oil pollution seems to lie in the shipping, which, if it can not discharge in or near harbors, will do so at sea. Moreover, it seems clearly established that great oil films do form at sea. Huge patches have frequently been observed, and Collinge reports that sea birds have been found dead and dying by hundreds off the English coast, their feathers saturated with oil. Death of sea birds from the same cause is reported from our Pacific coast.

[4] Appendix VII to the Report of the U. S. Commissioner of Fisheries for 1921. B. F. Doc. 910.

Tar from freshly tarred roads may be washed bodily into gutters and thence into streams or other bodies of water. Apparently, however, the greatest danger of direct action from tarred roads is from the fact that under the various influences at work—presumably heat, the mechanical action of vehicles, and soluble action of oils—poisonous substances are yielded to road washings for a great length of time. Various people in England, as recorded especially in the (London) Fishing Gazette, have described instances or experiments which indicate the continued poisonous action of tarred roads. Richmond found that although an undisturbed tarred surface became innocuous in three weeks, washings from material chipped from a road which had not been tarred for approximately one year were fatal to fish. Tarred road washings appear to be noticeably destructive of fish and, largely through the destruction of food organisms, of fisheries, chiefly in streams not larger than small rivers and ponds, particularly trout waters. In well-developed country so fortunate as to possess salmon streams, tarred roads doubtless constitute a menace to the salmon fishery.

Oil from motor cars goes into small as well as large bodies of water and is of greatest volume at large towns.

EFFECTS OF OIL POLLUTION.

Oil remains in part as a surface film on the water, and is probably in part emulsified and distributed in intermediate strata, while the heavier fractions are deposited on the bottom, where they persist for a long time. All parts are washed ashore to be deposited on the beaches and vegetation between tide marks.

This pollution may affect the fisheries in various ways: By actually killing or repelling the fish when they approach the shores in their migrations, at the only time when they can be caught; by sickening or killing bottom-dwelling species, such as oysters; by killing floating eggs and the delicate larvæ which, swimming at or near the surface, are suffocated by the deposit of an impervious film on the gill surface; by destroying the minute surface plants and animals on which these larvæ and some adult fishes subsist; by diminishing the aeration of the water at the surface and thereby aggravating the deoxidizing effects of organic pollutions from municipal sewage and similar sources; by destroying spawning grounds; by killing the shallow water vegetation which directly or indirectly furnishes fish food and shelter; and by impairment of the market value of fish through imparting to them an offensive taste.

Direct toxic effects.—A great variety of tars and tar oils, either from coal or petroleum, have been shown to be highly poisonous. Butterfield and writers in the (London) Fishing Gazette and the Salmon and Trout Magazine, and Shelford and Thomas in this country (see bibliography) have reported various experiments which show that tar and tar oils are poisonous in great dilutions. Tars or tar oils result from distillations of coal, petroleum, woods, etc. These distillation products are very complex and varying in composition but all may be assumed to contain some of the substances which, in very weak dilutions, have been shown to be highly poisonous to various fishes. Phenols and cresols (in dilutions of less than 100 parts per million) have been found quickly fatal by Butterfield and Shelford. Other constituents which are quickly fatal in the dilutions indicated are phenanthene and naphthalene (4 to 5 parts per million); xylene, toluene, benzene, and ethylene (22 to 65 parts per million); sulphur compounds, as hydrogen sulphide (5 parts per million); sulphur dioxide (16 parts per million); carbon bisulphide (100 parts per million); thiophene (27 parts per million); ammonia (7 parts per million); and ammonium salts and other nitrogenized compounds (some hundred parts per million); quinoline and isoquinoline (50 to 65 parts per million). The strengths given as quickly fatal are those which have caused death in one hour, or very little more, to sunfish (American) or gudgeon (European), fish which seem more than ordinarily resistant to poisons. It is stated (Seydel) that Russian investigators find hexahydrobenzoic acid ($C_6H_{11}CO.CH$), to be the essential poison of Russian petroleum, and that 4 to 16 parts per million were quickly fatal to a cyprinid and a percid.

The experiments of Thomas and others indicate that prolonged exposure to very much greater dilutions of these substances are fatal. Dilutions of various tars and crude distillates of petroleum, which required 66 or more parts per million for quick fatality, have proved fatal in strengths of from 13 to 33 parts per million in from one to three days. A great variety at 13 parts per million proved fatal in three days. One liquid tar waste at 2 parts per million killed sunfish (*Lepomis humilis*) in one day.

Mechanical effects.—Certain petroleum products appear to contain no poisonous substances soluble in water and to have little direct effect when allowed to form a surface film, but when emulsified by agitation prove deadly. A high-boiling petroleum distillate and a light fuel oil were found by Thomas to be quite harmless, unless as aeration retarders, or unless emulsified, as by continued moderate agitation, when

they coated the gill membranes of the fish and caused death by suffocation. Rushton found that by shaking up 1 part of benzine with 40,000 parts of water a mixture was formed which killed fish in five minutes, apparently entirely from poisonous action.

Doubtless under the agitation of continued wave action many, if not all, oils and oily substances will emulsify or mix to a considerable extent and so coat the gills of fish or other forms, or have a poisonous effect which their insolubility would otherwise prevent. According to Weigelt, ulcerations and attacks of disease have been found to follow the irritating action of petroleum products.

The eggs of sea fishes which do not seek fresh, brackish, or shore waters in which to spawn differ from the eggs of all these and of fresh-water species in that they are typically floating. In many cases, at least, the larvæ for a time are also floating. This fact renders the possibility of grave danger to the great sea fisheries a very striking one, for it can scarcely be thought that eggs can hatch and young normally develop in a medium of oil. The eggs and larvæ of oysters and other shellfish are not surface floating, but are carried up and down by the current, sometimes to the surface. A special danger to them lies in the fact that both oil and larvæ (and eggs) are prone to collect in eddies.

Prevention of aeration of the water.—The question of aeration prevention by an oil film is a very important one. Butterfield and Thomas have questioned considerable prevention, Butterfield on the supposition that mineral oil is similar to water in its oxygen absorption, and Thomas apparently on the theory that incomplete rather than complete films tend to form. There need be no question that extensive films do form. Furthermore it seems established by Adeney, especially in salt water and any water of considerable mineral content, that streaming, with the consequent distribution of the air-saturated surface water, is largely dependent upon evaporation and increased density at the surface. If this is the case it must follow that an oil film, by preventing evaporation, greatly checks aeration. Danger from this seems chiefly to center in harbors where, because of general pollution, particularly sewage pollution, the oxygen consumption is greatest and where, because of gas plants and shipping and the great number of automobiles, the discharge of oil is also extreme. These are the same harbors which are the gateways to the great natural spawning areas of the anadromous fishes.

In connection with the prevention of aeration, oxygen loss by the absorption of dissolved oxygen, by fatty acids and other substances present in oils and tars, should be taken into consideration.

Destruction of fish food.—Indirect action of oils and tars may consist of poisonous action on food organisms. Prawns appear very susceptible to tar poisons, and in English streams it has appeared that tarred-road washings are even more destructive of insect life than of trout directly. It can scarcely be doubted that the susceptibility of minute forms is at least of the same order as that of fish. With a number of microscopic forms, particularly diatoms, it is known that their susceptibility to a number of poisons is greater than that of fish (Whipple, Moore, and Kellerman). Destruction may, of course, be secondary, as from lack of oxygen, or from the destruction or spoiling of emergent or littoral vegetation with an oil coating, particularly in tidal areas (by which means wild fowls may also greatly suffer), and the consequent loss of a productive habitat.

From gas houses, tarred roads, and refineries much of the contamination eventually finds its way to the bottom to render it more or less sterile according to thickness and completeness of the deposit and the constancy with which the deposit is maintained. Wadham indicates that he found apparently complete strata for each fresh tarring of road, and that it took two or more years for a trout brook to recover proper productivity of fish.

In some waters the basic fish food consists in part of air-breatihng larvæ and pupæ of insects, which, if a layer of oil is present, as is well known, will be unable to come to the surface to breathe and so will be destroyed. Young of food fishes or the small fish on which food fishes feed will in consequence be deprived of an important source of food, and the productivity of the region will be correspondingly decreased. In 1920, through the Gulf States, Mr. Hildebrand found that Gambusia and Fundulus, which feed largely on such larvæ and pupæ, disappeared from oil-covered water. He took no special notes in regard to larger species, but believed they disappeared also, presumably because their food had disappeared.

SUMMARY.

Three main sources of oil and tar pollution have been found: Road washings, carrying great quantities of lubricating oil; gas houses and oil refineries; tankers, oil burners, and oil-engined shipping. Tars, tar oils, and crude distillery products are found

generally to be highly poisonous, whether in weak or great dilution. Some oils have been found to emulsify to a sufficient degree, with continued agitation, to coat the gills of fish and so produce death by suffocation. An oil film, through prevention or checking of aeration, is dangerous, particularly in busy harbors. The deleterious effect on spawning, by rendering spawning grounds unfit or inaccessible, is a grave danger arising from the pollution of harbors and streams. Another serious danger is found to lie in the possible effects on the diminution of the food supply. Through whatever means, it is an observed fact, according to Weigelt, that in Germany fish have completely disappeared from pools and ponds following the discharge of mineral oil into the water. In the sea a great danger is suggested by the fact that the eggs of sea fishes are typically floating, and that oil-burning and oil-engined shipping is greatly increasing.

Remedial measures may (now or in the future) be found: (1) In the recovery of oils from drainage water, as already has been proposed; (2) in the prevention of gas-house and refinery pollution, which prevention should be helped by the increased use of "wastes" in by-products; and (3) in prevention, by international arrangements, of the dumping of oil from ships in harbors or in the region of spawning grounds or special feeding areas.

Mr. OSBORNE. Gentlemen, the committee will now take a recess until some two or three weeks hence, when it will be called together again by the chairman, and further hearings held for those who have not had an opportunity of being heard to-day. The chairman will issue the notice.

And I wish on behalf of the committee to thank very sincerely the gentlemen who have appeared to-day and have contributed so much to the knowledge that we need in dealing with this matter.

Mr. CHALMERS. Mr. Chairman, I want to suggest that the clerk of the committee submit copies of all bills that have been introduced to the Secretary of Commerce, and ask him to return them with his recommendations and report at the next meeting.

Mr. OSBORNE. All right.

(Thereupon, at 3.45 p. m., the committee adjourned.)

[H. R. 6613, Sixty-seventh Congress, first session.]

A BILL To amend section 13 of the river and harbor act of March 3, 1899.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 13 of the act entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes," approved March 3, 1899, be, and is hereby, amended to read as follows:

"SEC. 13. That it shall be unlawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, oil in any form, or any refuse matter of any kind or description whatever other than ordinary sewage from streets, sewers, or vessels into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall be unlawful to deposit, or cause, suffer, or procure to be deposited material of any kind in any place on the bank of any navigable water, or on the bank of any tributary of any navigable water where the same shall be liable to be washed into such navigable water, either by ordinary or high tides, or by storms or floods or otherwise, whereby navigation shall or may be impeded or obstructed: *Provided,* That nothing herein contained shall extend to, apply to, or prohibit the operations in connection with the improvement of navigable waters or construction of public works, considered necessary and proper by the United States officers supervising such improvement or public work: *Provided further,* That the Secretary of War, whenever in the judgment of the Chief of Engineers anchorage and navigation will not be injured thereby, may permit the deposit of any material above mentioned other than oil in any form, or oil refuse, in navigable waters within limits to be defined and under conditions to be prescribed by him, providing application is made to him prior to depositing such material; and whenever any permit is so granted the conditions thereof shall be strictly complied with, and any violation thereof shall be unlawful."

[H. R. 8783, Sixty-seventh Congress, first session.]

A BILL To amend an act entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes," approved March 3, 1899, by adding a new section thereto forbidding the deposit of noxious acids and acid materials in navigable water of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the act entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes," approved March 3, 1899 (Thirtieth Statutes at Large, page 1152), be, and the same is hereby, amended by adding thereto the following section:

SEC. 13a. That, within limits to be prescribed by the Secretary of War, it shall not be lawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited from any source whatever, any free acid or acid waste in any form, or any material which will become acid after being in the water, either directly or indirectly, into any navigable water of the United States, or into any tributary of any navigable water; and every such deposition of such free acid, acid waste, or acid-forming material shall be a separate offense, and where the deposition or flow is continuous each calendar day of its continuance shall be regarded as a separate offense.

In case the Chief of Engineers, United States Army, is satisfied after investigation that the discharge from any active or abandoned mine or from any factory or other establishment is acid or carries materials which will become acid, he may, if he regards it as necessary, prohibit the discharge of such waste or other material, or may regulate the entrance thereof into the stream, or may require the treatment of such discharge in such manner as to destroy its acidity.

The Chief of Engineers, United States Army, shall consult and advise with the owner of any coal mine, either active or abandoned, or of any factory or other establishment, at the request of such owner or of his own motion, as to the best practicable and reasonably available means of rendering the waste or refuse therefrom harmless.

Every person and every corporation that shall violate, or that shall knowingly aid, abet, authorize, or instigate a violation of the foregoing provisions of this section shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding $2,500 nor less than $500, or by imprisonment (in the case of a natural person) for not less than thirty days nor more than one year, or by both such fine and imprisonment, in the discretion of the court, one-half of said fine to be paid to the person or persons giving information which shall lead to conviction: *Provided*, That this section may be enforced as provided in section 17 of the river and harbor act of March 3, 1899, the provisions whereof are hereby made applicable therefor.

[H. R. 7430, Sixty-seventh Congress, first session.]

A BILL To amend section 13 of the river and harbor act, approved March 3, 1899, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 13 of the river and harbor act, approved March 3, 1899, shall be, and hereby is, amended so as to read as follows:

"That it shall be unlawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited, either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, any oil, fuel oil, oil sludge, or any other oil refuse, or any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall be unlawful to deposit, or cause, suffer, or procure to be deposited material of any kind in any place on the bank of any navigable water, or on the bank of any tributary of any navigable water where the same shall be liable to be washed into such navigable water, either by ordinary or high tides, or by storms or floods, or otherwise, whereby navigation shall or may be impeded or obstructed: *Provided*, That nothing herein contained shall extend to, apply to, or prohibit the operations in connection with the improvement of navigable waters or construction of public works, considered necessary and proper by the United States officers supervising such improvement or public work: *Provided further*, That the Secretary of War, whenever in the judgment of the Chief of Engineers anchorage and navigation will not be injured thereby, may permit the deposit of any material above mentioned other than oil, fuel oil, oil sludge, or any other oil refuse, in navigable waters, within limits to be defined and under conditions to

be prescribed by him, providing application is made to him prior to depositing such material; and whenever any permit is so granted the conditions thereof shall be strictly complied with, and any violation thereof shall be unlawful."

[S. 2414, Sixty-seventh Congress, first session.]

A BILL To amend section 13 of the river and harbor act of March 3, 1899.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 13 of the act entitled "An act making appropriations for the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes," approved March 3, 1899, be, and is hereby, amended to read as follows:

"SEC. 13. That it shall be unlawful to throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited either from or out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, oil in any form, or any refuse matter of any kind or description whatever other than ordinary sewage from streets, sewers, or vessels into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall be unlawful to deposit, or cause, suffer, or procure to be deposited material of any kind in any place on the bank of any navigable water, or on the bank of any tributary of any navigable water where the same shall be liable to be washed into such navigable water, either by ordinary or high tides, or by storms or floods or otherwise, whereby navigation shall or may be impeded or obstructed: *Provided*, That nothing herein contained shall extend to, apply to, or prohibit the operations in connection with the improvement of navigable waters or construction of public works, considered necessary and proper by the United States officers supervising such improvement or public work: *Provided further*, That the Secretary of War, whenever in the judgment of the Chief of Engineers anchorage and navigation will not be injured thereby, may permit the deposit of any material above mentioned other than oil in any form, or oil refuse, in navigable waters within limits to be defined and under conditions to be prescribed by him, providing application is made to him prior to depositing such material; and whenever any permit is so granted the conditions thereof shall be strictly complied with, and any violation thereof shall be unlawful."

That every person and every corporation, shipowner, and shipowning company, that shall violate, or that shall knowingly aid, abet, authorize, or instigate a violation of the provisions of this section shall be guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding $1,500 nor less than $500, or by imprisonment for not less than thirty days nor more than one year, or by both such fine and imprisonment, in the discretion of the court, one-half of said fine to be paid to the person or persons giving information which shall lead to conviction.

POLLUTION OF NAVIGABLE WATERS

HEARINGS

ON THE SUBJECT
OF

THE POLLUTION OF NAVIGABLE WATERS

U.S. Congress. House.

HELD BEFORE THE

COMMITTEE ON RIVERS AND HARBORS

HOUSE OF REPRESENTATIVES

SIXTY-SEVENTH CONGRESS
SECOND SESSION

CONSISTING OF

S. WALLACE DEMPSEY, New York, *Chairman.*

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JOSEPH H. McGANN, *Clerk.*

DECEMBER 7 AND 8, 1921

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POLLUTION OF NAVIGABLE WATERS.

COMMITTEE ON RIVERS AND HARBORS,
HOUSE OF REPRESENTATIVES,
Wednesday, December 7, 1921.

The committee met at 10 o'clock a. m., Hon. S. Wallace Dempsey (chairman) presiding.

The CHAIRMAN. Gentlemen, we will first call on the Members of Congress as they have other duties to perform during the morning hour before the House convenes. Mr. Treadway, we will be pleased to hear from you first.

STATEMENT OF HON. ALLEN T. TREADWAY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MASSACHUSETTS.

Mr. TREADWAY. Mr. Chairman, I did not realize I was getting into as formidable a hearing as this is, but it is a very great pleasure to appear very briefly before a committee which I had the honor of serving on so long. I am only sorry to see that time has made such havoc in its membership. I think the chairman and perhaps two others are the only members of the committee who were on the committee with me.

The CHAIRMAN. Happily, many of those who have left, have gone to higher places.

Mr. TREADWAY. Thank you.

Mr. LAYTON. Is that a reflection on those who have come upon the committee?

Mr. TREADWAY. On the contrary, I was just going to say, Doctor, that I realize the affairs of the committee are in much better hands than under my modest service.

The people in my section of Massachusetts are very deeply interested in the proposed bill, of which I have a copy; that is, the one introduced by Mr. Appleby, which I believe is the one directly before you and the one on which the previous hearing was held.

I realize the situation quite fully as applied to the seashore resorts and sections adjoining the great cities. It would seem to me from reading Congressman Appleby's bill that he is not at variance with the manufacturing and industrial interests of New England, but there are certain phrases used in the bill which, if enacted into law, would be extremely detrimental. For instance, I remember the definition of a navigable stream to be any body of water that would float a log, and I believe that is an established definition, and such being the case, of course any stream tributary to a water-power stream would be a navigable stream in the sense of that definition, and therefore wherever power is generated for manufacturing purposes, that stream would come within the phraseology of the language employed in this bill.

It also refers to refuse of any kind whatsoever. Now, that is an extremely broad expression and would probably hit every manufacturing industry in New England because every paper mill, woolen mill, silk mill, and all of our productive forms of industry use the water on which such mills are situated and then pass it back into the stream again; and of course, such language as is employed in that phraseology would, in a sense, close up all of our industries.

I realize that is not the intention of the Congressman introducing the bill, and from reading the hearings previously held, I can see that the intention is to protect the sections adjacent to the large cities where refuse has been discharged or is being discharged by steamers or vessels, very largely; but he has, I am sorry to say, confused the two subjects and locked them in such a way as to be very objectionable to our industrial sections of New England.

Further than that, Mr. Chairman, I understand that there will be submitted to you a brief showing that practically what is desired by this legislation is

already on the statute books. I will not touch on that point as I know that will be brought before you.

There is one further thought I would like to leave with you and that is objection to the expression in another bill introduced by the Member from West Virginia, I believe, Mr. Rosenbloom, referring to acid pollution. That would also, of course, be impossible from the viewpoint of the manufacturing industries of New England because all paper mills and all of our other lines of industry use large quantities of acid, some of which, of course, will go back into the streams. However, the less loss there is, the better for the manufacturer because, naturally, they do not want to throw those acids away which have cost them a great deal of money, and naturally they are reclaiming everything they can along that line, so that it would seem to me, Mr. Chairman, that there is no pressing need of legislation of this character, and in behalf of the industries of my section, particularly, the paper mills of western Massachusetts, I wish to register my opposition to the proposed legislation.

The CHAIRMAN. Mr. Treadway, have you any people from your district or from your vicinity whom you want to have heard?

Mr. TREADWAY. No, sir; I have a number of letters which I will be glad to file with you, if you care to have me do so, but I do not think that is necessary. I do not know of any constituents of mine who are present and who desire a hearing.

The CHAIRMAN. If you care to do so, you may leave the letters and then we will see whether we desire to have them inserted in the record.

Mr. TREADWAY. Very good. I will see that the file is left with Mr. McGann.

Mr. CHALMERS. I would like to ask Mr. Treadway a question. How about the desirability of neutralizing the acids that you have just referred to.

Mr. TREADWAY. I am not a chemist, of course, and I can not offer any such testimony as evidently is about to be presented to you, but undoubtedly there is opportunity to study that problem; but the absolute prohibition of allowing any chemicals to go back into the streams would, of course, be very detrimental; but neutralization may be another line of study.

Mr. CHALMERS. You understand there are two interests affected here, the fishing interests and the manufacturing interests.

Mr. TREADWAY. Yes, sir.

Mr. CHALMERS. If the acid can be cared for by an alkaline process and neutralized so as to protect the other interests, do you not think it would be wise to do so?

Mr. TREADWAY. Of course, a stream will clarify itself. That is easily demonstrated. How long a distance it requires for water to clarify itself is another question. For instance, take the Connecticut River, some of these industries to which I have referred as protesting against this proposed legislation are situated on the Connecticut River, in my district. In spite of all this industry which, as you know, is situated on the Connecticut River, the further end of that river, I think Mr. Freeman will tell us, is most productive of shad and other fish. Connecticut River shad is famous in New England. So that it takes care of itself if given the opportunity of clear flowing for a certain distance. However, if it could be done as you suggest, I have no doubt the industries would not object to that, but they do object to being prohibited from having any acid go into the streams.

The CHAIRMAN. Mr. Tilson, do you desire to be heard?

STATEMENT OF HON. JOHN Q. TILSON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CONNECTICUT.

Mr. TILSON. Mr. Chairman, of course Connecticut is interested in pure water, and is especially interested in the oyster industry, and does not wish to have the water so polluted as to destroy the oyster and other fishing industries, but a perusal of this bill would indicate that the bill in the language in which it now stands, if enacted into law, would practically put out of business Connecticut, which is a hive of industry.

The CHAIRMAN. Mr. Tilson, I have just been comparing the first proposed bill with a provision in the rivers and harbors act of March 3, 1899, which is existing law, and I can not see but what that act is more far-reaching than this present proposed act. Have you seen the other act?

Mr. TILSON. I have not compared the two acts.

The CHAIRMAN. The only differences I can see are, first, the proposed bill says that it shall be unlawful, whereas the act of March 3, 1899, says it shall

not be lawful, a difference, of course, in language and not in substance. Then, at the bottom there is an additional provision prohibiting the depositing on the shores of the same substances as are enumerated in the act where they are liable to be washed into the streams.

Mr. TILSON. But it says in this proposed act, "any refuse matter," and there are hundreds of plants, large and small, that are dumping coloring matter of one kind and another into the streams, and if it is dumped far enough up, as Mr. Treadway has just said, it purifies itself in a comparatively short distance; and during all the years that these industries have been established we have never had any complaint about them.

The CHAIRMAN. That is precisely the language used in the old act, "any refuse matter of any kind or description whatever."

Mr. TILSON. Well, it certainly has never been applied, because these industries have gone right along just the same as they have for years. If it was intended to apply to all refuse matter, it has certainly been a dead letter.

The CHAIRMAN. Probably it has not been interpreted to mean what you have in mind.

Mr. CLOUSE. Mr. Chairman, I would like to call attention to this act. My construction of it, just from a casual perusal of the act, is that it is made unlawful under the act of 1899 to deposit these matters in navigable waters or their tributaries only when navigation may be impeded or obstructed.

Mr. TILSON. If that is what it provides, I am not at all surprised that it has not been construed so as to interfere in any way, because there is certainly nothing that has been placed in the waters that would impede navigation, and there should not be. It seems to me it would be a very proper act to prevent anything that would obstruct navigation. All we want, gentlemen of the committee, is that if any additional legislation is passed that it be of such a reasonable character as not to hinder legitimate industry.

The CHAIRMAN. Mr. Tilson, have you anyone here from Connecticut who wishes to be heard?

Mr. TILSON. There are a number of gentlemen here from Connecticut who are to appear before you, but I have not a list of them or the order in which they may wish to be presented. Mr. Buck, have you that information?

Mr. BUCK. There are four or five gentlemen here from Connecticut, but the principal argument will be made for them by Mr. Emery, of the National Association of Manufacturers. I represent that association; and if there are one or two peculiar differences in the Connecticut situation from the general situation, I will be glad to state them; but we have been in consultation with Mr. Emery, and he is fully cognizant of our situation.

Mr. TILSON. And you represent the Connecticut manufacturers?

Mr. BUCK. Yes, sir.

Mr. TILSON. That is all, Mr. Chairman. I thank the committee very much.

Mr. CHARLES WHEELER. Mr. Chairman, may I ask Mr. Treadway whether he or his constituents are opposed to the principle of cleaning up our waterways?

Mr. TREADWAY. Oh, no, indeed.

The CHAIRMAN. Mr. Secretary, we will be pleased to hear from you.

STATEMENT OF HON. HERBERT HOOVER, SECRETARY OF COMMERCE.

Secretary HOOVER. Mr. Chairman, the Department of Commerce, as, of course, you are aware, is charged with many of the responsibilities that bear upon this problem, and last June I called a conference of the State fish commissioners, the representatives of the larger fishing organizations, together with the larger fish merchants and shippers. This meeting spent some days in Washington in studying the very problems affecting the fisheries, and they brought forward certain resolutions at that time which, I think, expressed fairly fully the feeling of the entire fishing industry on this problem, as it was a most representative meeting. Those resolutions read as follows:

"Whereas at the conference of State fish commissioners, fish producers, and anglers of the Atlantic and Gulf coasts, called by the Secretary of Commerce on June 16, 1921, the men from all of the States represented gave full consideration to the pollution problems confronting the fisheries, and to the question of Federal control of fishing operations—the following resolution was unanimously adopted as the concrete expression of the conference: Therefore be it

"*Resolved*, That the pollution of our waters by trade waste of all kinds, raw sewage, and all other substances deleterious to the aquatic life, and particularly oil pollution from the oil stations and refineries, and the discharge from small and large oil using and carrying vessels is the most vital problem generally affecting our fisheries for food fish, shell fish, and crustaceans; and

"*Resolved*, That unless these conditions are promptly remedied our shore fisheries, at least, will steadily decline and in a few years be almost altogether ruined. We, therefore, urge immediate work by the Department of Commerce in investigating conditions in the producing districts and the prompt passage of remedial legislation by Congress; and be it further

"*Resolved*, That on the question of general Federal control of the migratory fishes, we make the following recommendation:

"That the Department of Commerce call, from time to time, conferences with the governors of the various States in conjunction with the State fish commissioners with the view of suggesting uniform legislation by the various States for the protection of such varieties of migratory fish as may be threatened with extinction through pollution or any other causes."

I have no doubt from the evidence presented by those gentlemen actively engaged in the fishing industry and from the investigations carried on by the Bureau of Fisheries that the fishing industry on our coast is seriously jeopardized by pollution.

The CHAIRMAN. Mr. Secretary, I notice you speak simply of the coast.

Secretary HOOVER. That is true in application to a great many of our streams.

The department has given a great deal of consideration to the matter and has made some investigations, and I think our concrete conclusion at the moment is this: That the oil pollution is the most serious of all; that it not only is destroying the fish, but it offers very great dangers to our large cities, as witness the fires we have already had. It is doing great damage to our beaches, and there can be no question in our minds as to the desirability of immediate legislation in the correction of that particular form of pollution.

Mr. LAYTON. Mr. Secretary, have you made any investigation specifically as to what is called purely chemical pollution of streams or of the littoral waters?

Secretary HOOVER. Some investigation has been made in that direction, but I feel that we do not know as yet enough about its effect and as to the damage that would be done in its suppression as distinguished from the counter-damage to fish to give an adequate judgment. Our inclination for the moment is to suggest for your consideration that legislation should be confined to oil pollution and that there should be established an investigation of exhaustive character into the other forms of pollution and as to its industrial effect. Just as showing the desirability of a careful investigation from all points of view I might point out a suggestion that has been made that appears to me to have some merit; that is, that there are some localities that are polluted beyond all redemption and are not likely to ever be redeemed from the point of view of fish.

Mr. LAYTON. Can you mention some of those, Mr. Secretary?

Secretary HOOVER. You might take New York Harbor. It is improbable that any form of control of pollution would ever restore any great quantity of fish in New York Harbor, that the cost of preventing pollution, even the cost itself, might outrun the whole value of any fisheries that might be established within the limits of the harbor or immediately outside. That therefore it is desirable to investigate whether or not some districts could not be established that could be kept free from pollution, where fish life might be likely to revive, and where there would be a less damage imposed upon industry and where there would be some hope of maintenance of enforcement. The problems of municipal pollution and a hundred other things of that character enter into the making of a very exhaustive study desirable. I have not the feeling that any general prohibition of pollution as against all forms of pollution is desirable at the present moment without more information. We might be doing in some localities infinitely more damage to industry and to commerce, imposing infinitely more cost upon municipalities than the value of any fishery that could be established would warrant.

The CHAIRMAN. Take some localities; would it not be a burden upon the municipalities and the industries to dispose of their refuse?

Secretary HOOVER. It would. There are involved in these problems the necessity to determine methods of prevention of pollution. It is possible that methods could be developed in manufacturing processes that would eliminate polluting

materials, but it would seem inadvisable to offer drastic prevention to pollution that might drive out manufacturing and industry without an opportunity to study and adjust themselves to such a situation.

The CHAIRMAN. And cripple and shut them down while studying the needs?

Secretary HOOVER. And at the same time it might be effective against a locality where there is little hope of destroying any fish industry of sufficient value. There are localities, on the other hand, where the pollution is so far not very great and where the damage to industry would be small in comparison to the restoration of the fisheries that it would be desirable to have legislation; but the whole matter needs investigation. It is a matter that it is almost impossible to go into without pretty extensive inquiry.

In the matter of oil pollution, I have heard no constructive objection to the necessity of immediate solution. Our larger industrial communities are themselves paying a tremendous cost for oil pollution at the present moment in inherent charges in insurance and other factors that indirectly bear on the industry itself. I should think a wise consideration of the matter by industry and the manufacturing people would lead them to support very drastic legislation at once on the whole question of oil pollution.

The CHAIRMAN. Has the department made any investigation as to fires caused by oil pollution? I notice that you spoke of that. We have heard of that before, but we have never heard of any instances where fires have been caused in that way.

Secretary HOOVER. The one that recurs to me—I do not know that I can give you the evidence, I have assumed it because of constant statements—the most prominent example being Baltimore, where a very large fire originated on the surface of the bay, and I think the New Orleans fire is attributed by a great number to the same cause. I have not pursued it; I have accepted it as being a generally accepted statement.

The CHAIRMAN. That is the way it has come to us.

Secretary HOOVER. It is a matter which could be investigated very easily.

The CHAIRMAN. Is the oil pollution, so far as your investigation shows, prevalent in the country except on the coast? There is not any disposition of oil to any great extent on the inland waterways?

Secretary HOOVER. No; only in the oil regions, where the production of oil has tended to pollute the streams, but it is not a very extensive area. Nor do I think that the measures for the prevention of oil pollution are difficult of administration. There are only comparatively few centers of pollution—that is, the ships and the refineries.

The CHAIRMAN. Either through production or at distribution centers?

Secretary HOOVER. Yes, sir.

The CHAIRMAN. So, in concrete form, your suggestion is that for the present, until a complete investigation both of the benefits to be derived from the prohibition of pollution and the disadvantages, can be made and tabulated and put into concrete form, that it be confined to the prohibition of oil pollution?

Secretary HOOVER. That is my conclusion. Such an investigation should be directed from the point of view of constructive measures in the nature of trying to establish pollution and nonpollution districts—something of that kind.

The CHAIRMAN. It has been suggested to me that the solicitor for your department would present to the committee a draft of a measure such as your department thought would be suitable.

Secretary HOOVER. Judge Lamb has formulated some features in that direction, which he will be able to present to the committee, not with a view of suggesting legislation to you but merely to reduce to concrete form.

Mr. LAYTON. Do I understand, Mr. Secretary, that your department has under way an investigation as to chemical pollution, leaving out the oil?

Secretary HOOVER. No; we have had no fund or equipment for any investigation of an exhaustive character; simply a question of taking casual evidence from individuals, not of the exhaustive character that needs to be made.

Mr. OSBORNE. There is one feature on which I should like to have your judgment, Mr. Secretary. Much of the oil pollution comes as the result of tankers coming back from Europe and other parts of the world with water in ballast, water being in the tanks, and when they come to discharge that water, of course there will be a little oil come out with it. In your opinion are we able to control that outside of the 3-mile limit? Oil will drift in easily from a distance of 3 miles.

Secretary HOOVER. In the first instance, I believe it is possible to develop methods by which the discharge could be undertaken in such a fashion as to prevent the oil coming into the area. As to the control outside of the 3-mile limit

it seems to me that legislation would have to be directed to the control of the ship; that control could extend clear outside of the 3-mile limit.

Mr. LAYTON. That would only apply to a vessel flying the American flag?

Secretary HOOVER. I should like to have Judge Lamb to speak on that. I think we have some notion as to how the harbors can be controlled.

Mr. FREEMAN. Is your department satisfied that section 13 of the rivers and harbors act of March 3, 1899, gives the Secretary of War authority to permit the discharge of refuse matter?

Secretary HOOVER. I do not recall.

Mr. FREEMAN. In this act of March 3, 1899, it is provided that it shall not be lawful to throw, discharge, or deposit any refuse matter into the navigable waterways?

Secretary HOOVER. I do not recall the technical discussion that we had on whether or not that could be made sufficiently effective, but the solicitor for the department can probably illuminate that. I think our general conclusion was that it was not wide enough to control the situation.

The CHAIRMAN. It has been suggested by one of the Members that this act is limited to interference with navigation. It seems to me that a liberal interpretation might make it broad enough?

Secretary HOOVER. I would prefer to have Judge Lamb to speak to you on that question, because he knows more about it.

Mr. CHALMERS. In your suggestion to establish districts, Mr. Secretary, one at New York Harbor and possibly one at Boston, have you in mind any other districts or have you formed any idea as to how many?

Secretary HOOVER. No; I had not. It seems to me it is a question of the development of the fisheries as against the development of industry. For instance, take Chesapeake Bay. Chesapeake Bay is one of the great fish-producing regions of the country and it would appear in balance as between industry on the Chesapeake Bay and a continuance of the fisheries that one would lean to the fisheries, but that will need careful investigation.

Mr. CHALMERS. You have access to the detailed information, and I would like to ask whether the committee could be informed from your department on this subject?

Secretary HOOVER. Such information as we have is entirely at the disposal of the committee. I was anxious to make it clear that we do not believe our information at the moment goes far enough to advise you as to rigid legislation outside of oil.

Mr. LAYTON. Following your line of thought, if I am correct, it is that this matter is of such tremendous magnitude from an industrial standpoint that outside of the generally admitted pollution by oil, that other forms of pollution having a direct reference to industrialism should be carefully studied out before any legislation is enacted?

Secretary HOOVER. That is my view.

Mr. LAYTON. In other words, take the Delaware River which, clear down to the Capes, is lined on both sides with all sorts of industrialism, that would need some consideration before drastic legislation is enacted?

Secretary HOOVER. That is quite correct. Investigation goes even further—it is the method by which prevention of pollution can be accomplished and at the same time not destroy industrialism. There are many phases that need very careful inquiry.

The CHAIRMAN. We are very much obliged to you, Mr. Secretary.

STATEMENT OF HON. BENJAMIN L. ROSENBLOOM, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WEST VIRGINIA.

Mr. ROSENBLOOM. Mr. Chairman and gentlemen of the committee, I listened intently to the remarks of the Secretary of Commerce, who preceded me, and was impressed with his statement that legislation to correct conditions of pollution at ports and in harbors is imperative. Although Mr. Hoover decribed the present condition of the waters at ports and harbors as damaging to property and destructive to fisheries and the fishing industry, I regret greatly that his investigations were not of sufficient scope to observe the conditions of navigable streams resultant from the deposit of noxious acids. In view of his recommendation that nothing in the way of legislation be attempted until after a thorough investigation has been made of navigable inland waterways, with your indulgence I will submit comprehensive reports

and studies which have already been made, and which I believe will convince you, gentlemen of the committee, that something must be done to correct existing conditions.

Apparently the only consideration which the Department of Commerce has given this question, according to the statement of Secretary Hoover, was from the viewpoint of the successful operation of fisheries and the preservation of fish life.

While the preservation and propagation of fish is an incidental object that we hope will be accomplished by the enactment of the bill which I introduced, it is by no means the primary consideration. While it may be the fundamental object of the Department of Commerce to secure legislation which will afford required protection to the fishing industry at ports and harbors, I am actuated by many considerations in my effort to prohibit the contamination of inland waterways.

The discharge or deposit of free acid, acid waste, or any material which will become acid after being in the water, is responsible for the following injury and damage:

It constitutes a constant menace and is a source of injury to the health of persons residing along the stream and using the water.

It is damaging to the steel structural parts of Government dams, resulting in hindrance to navigation.

Acid water corrodes and deteriorates plumbing in homes and buildings.

It is destructive to boiler tubes in plants located along the river, and as well in steamboats operating thereon.

It annihilates all fish and kills all manner of vegetation.

It jeopardizes the health of stock on the farms.

The acid causes injury to clothing washed in the water.

The chemicals make the water dangerous to bathe in.

At some points along the Ohio River, which river has come under my personal observation, and in which I am particularly interested, the bathing beaches were deserted because of the odor from the decaying fish.

It is therefore obvious, gentlemen, that the preservation of fish life is entirely incidental, viewed from the standpoint of public importance.

In my opinion, legislation tending to overcome the condition of navigable inland waterways is of far greater importance than the legislation which the Secretary of Commerce recommends. The water of inland rivers in many places is the only source for human consumption, and is used everywhere for domestic purposes. Ocean water is not extensively used for these purposes.

In my home city of Wheeling, W. Va., located on the banks of the Ohio River, we do not have any system of filtration, and the polluted water from the river is served to the public for every domestic use. This is true of other cities in this country. While it is true that people who can afford to have pure water delivered to them for drinking purposes do so, it is also true that many of the people in less fortunate circumstances must drink the water which is sufficiently contaminated by this acid pollution to exterminate fish life.

The United States Government is annually spending millions of dollars in constructing locks and dams and in making other improvements of navigable waterways, and the acid which is deposited in the water is destroying this work, so that Congress should do one of two things, viz, either discontinue the appropriations for improvements or protect the improvements that have been made.

The CHAIRMAN. Just a moment, Mr. Rosenbloom. You take the lower Mississippi; they are having a very prosperous season there in shipping. I do not think there is any pollution interfering with navigation or with the water in that part of the stream. I do not think that is true, probably, of the Ohio.

Mr. ROSENBLOOM. I will say frankly that this pollution does exist in the Ohio, virtually all the way from Pittsburgh to Cairo. The water is so highly charged with acids from the factories and mines along the river that it is eating out all the metal work on the dams, and Gen. Beach will tell you that it is only a question of time before all the metal superstructure will be eaten out and will have to be replaced.

The CHAIRMAN. That is what I called attention to in the present act. I think the present act does apply in a broad way to navigation. It does not apply simply to the ability to run the boats?

Mr. ROSENBLOOM. The condition of the water is such that it interferes with navigation. On the navigable streams the life of the boilers is so short that it

is unprofitable to operate steamboats. The public is interested in development of steamboat transportation. The Government is interested in it to the extent of improving the waterways. Both the Government and operators of steamboats will be discouraged by the destruction of their equipment due to this acid in the water.

The CHAIRMAN. Do you not think that the enforcement of the present law would cover that?

Mr. ROSENBLOOM. No; for the reason that while it allows the War Department to have control of the streams, there is not sufficient authority vested in the War Department to carry its orders into effect.

The principal reason for the introduction of this bill, which is always the reason for the introduction of bills in legislative assemblies, is the almost universal demand not only from the constituents whom I have the honor to represent but as well from people all along navigable streams everywhere. I have introduced this bill to rectify a condition which can not be remedied in any other way.

The people who live in the Ohio Valley and who are taxpayers owning their own property do not understand why certain individuals should be permitted to dump acids into the river which corrodes and deteriorates the plumbing in their homes, causing them annoyance, inconvenience, and expense. The farmer is indeed hesitant to offer water to his stock that is sufficiently contaminated to cause the destruction of all animal life which would be present in pure water. Women complain that the acid in the water has a very destructive effect on the clothes which are washed in it, and they have no other water to use except that from the river.

After a period of commercial inactivity extending until the past summer, the Ohio River had again stocked itself with numerous fish. For the first time in many years men had an opportunity to secure an article of food of great value without cost. During the industrial depression, when many families were financially crippled, many men availed themselves of the opportunity of providing a meal for their families by fishing along the banks of the river. As I have previously stated, the mere preservation of fish is only an incidental consideration for the enactment of the bill which I have introduced, yet at a time such as I have mentioned the relief afforded by food provided as a result of a catch of fish was indeed welcome to the family in dire circumstances.

The item of fish preservation is not to be ignored. Fish do not require hay, oats, or corn on which to survive, nor do they require care or attention from anyone. It consumes nothing that could otherwise be utilized by mankind, but is always available as a source of food supply. The Government annually spends a great deal of money stocking streams with fish, mainly on considerations such as I have outlined. Again, I say the Congress ought either to discontinue appropriations for this purpose or adopt legislation which will protect the streams after they are stocked with fish.

Following the industrial depression some of the mills resumed operation, and after the first deposit of acid into the Ohio the surface of the water for many miles was covered with dead fish. The combination of the acid in the water and the dead fish made the water unfit for every purpose, and the odor from the decaying fish was so intense, particularly in the hot summer weather, that for a considerable period of time people living adjacent to the river were greatly annoyed.

I contend that these people are entitled to relief from similar conditions, which will continue so long as the streams are defiled. I submit, further, that no individual or group of individuals has the right to create such a nuisance against the mass of the people.

I am offering for your inspection letters and petitions of protest against these conditions. I have also received many resolutions of indorsement of the bill which I have introduced from the people who are affected. I call your attention to communications which I have from New Cumberland, Wellsburg, Wheeling, New Martinsville, Marietta, Parkersburg, Louisville, all located along the Ohio River, and all complaining of the conditions which I am endeavoring to portray and asking for relief.

Mr. LAYTON. As a matter of fact, for public information, how much fish have you in the river?

Mr. ROSENBLOOM. I mentioned the fish, not for the purpose of propagation, but as showing the condition of the water.

Mr. LAYTON. As affecting the public health?

Mr. ROSENBLOOM. As affecting the public health. Even the manufacturers who are located along the river are compelled to treat the water chemically before they are willing to use it in their boilers.

Mr. LAYTON. I should judge from your remarks that 75 per cent of the water was pure sulphuric acid?

Mr. ROSENBLOOM. I would not say that it was quite that high. I would say it is over "one-half of 1 per cent." [Laughter.] It is an unlawful content. I am sure of that.

Speaking seriously, however, I regret that the only consideration which the Department of Commerce gave this subject was from the viewpoint of the protection of fisheries. I think I have made it clear that the problem which confronts us is of vastly superior consequence. While I realize there may be some Members of Congress who are interested primarily and entirely in prohibiting the pollution of ports and harbors, there is not a Member in Congress who is not interested in the object of the bill which I have introduced, to keep the streams in this country uncontaminated, pure, and undefiled.

The district which it is my privilege to represent is a busy hive of industry. Practically every foot of the shore line is occupied by a factory of some kind. I also have many coal mines. In justice to these manufacturers and to the operators of these coal mines it is only fair for me to state that I have not received an objection to the legislation which I proposed.

The conditions of which I speak are unusually acute in streams where the Government erected dams. These dams naturally retard the normal movement of the water, retaining sufficient in the pools to insure a certain depth or stage. This aggravates the condition.

Some of the gentlemen who have preceded me argue that water purifies itself. This was probably true at a time when the population residing along the streams and the industries located on the banks were not congregated so thickly as they are now. On the banks of the Ohio River industrial plants are so congested that the water does not have any chance to purify itself, and the flow being interfered with also adds to prevent natural purification.

This is a matter that well deserves the attention of this committee, gentlemen, as the question can only be solved by the enactment of national legislation. Sixteen separate States have already passed laws undertaking to eliminate this condition. It is evident that it would be of no avail for manufacturers and coal operators in one State to endeavor to remedy the condition when similar industries in adjacent or contiguous States were not compelled to exercise the same precaution.

Mr. LAYTON. Do I understand that in using the water of the river for commercial purposes they are studying to do it by seeking to purify the water?

Mr. ROSENBLOOM. Yes, sir; to put it in condition for use in the boilers.

Mr. LAYTON. To get rid of the acids, by reason of which they can not use it in the boilers or for other purposes?

Mr. ROSENBLOOM. That is correct.

Mr. LAYTON. And your idea is that by having that process extended to this flow into the stream, polluting the stream, it would not cost very much more than the other?

Mr. ROSENBLOOM. It will not cost as much, as will be demonstrated here. From some of these other gentlemen you will hear the objections from the manufacturers and coal operators. If this legislation were to entail any great burden or interfere with or embarrass industry in any way I would not advocate its enactment.

M. LAYTON. Just another question: You do not believe that all of the refuse that goes from every kind of a mill into the stream is necessarily a detriment to fish life or harmful to Government work?

Mr. ROSENBLOOM. No; that is a decision which, under the bill, will be left to the War Department.

Mr. LAYTON. Do you not think that before any legislation is enacted there should be an absolute investigation of the chemicals to find out just exactly which are deleterious and which are simply neutral? That would be the most scientific way.

Mr. ROSENBLOOM. We must have the law passed before any offense has been committed. It has been demonstrated that certain acids and alkalis are harmful and deleterious. The mere discharge of harmless waste matter into the streams would not be an offense which can be punished. Under this bill the offender has the right to call in and consult with the Chief of Engineers of the

United States Army, who is in charge of this stream. It gives him that power. While he may have the power under the present law, there is no way of compelling appliance with his advice, as there are no "teeth" in the law. The act I propose, taken along with the act regulating the harbors of this country, would undertake to place this matter in charge of those who would be able to enforce it.

Before introducing this measure I, of course, considered carefully the effect it would have on industry. I think I have previously stated that I would not conscientiously advocate any measure which would encumber the manufacturer or the coal operator. I expect to be able to show by Gen. Beach and some other gentlemen who have made an intensive study of this problem that these conditions can be corrected at an inconsequential cost. I earnestly believe that suitable legislation is imperative, and can not see where anything can be gained by deferring or delaying the matter.

We men, as I take it, are here representing those who are not of sufficient means, and whose individual interests are not great enough to enable them to come here or to hire attorneys or experts as lobbyists to secure beneficial legislation. We are the paid lobbyists of the people back home, and in my district I probably have 100,000 or more of them, and none of them are here on either side of this question. If the interests represented here who object to this legislation will bear with the demonstration we have here, and will listen to the statement of Gen. Beach, they will be convinced that the question must be considered, and should be considered at once.

Mr. CLOUSE. Will the gentleman permit an interruption?

Mr. ROSENBLOOM. Yes.

Mr. CLOUSE. Under the act of March 3, 1899, which is the existing law, does not that act prohibit the discharge or deposit of any substance or material in any navigable stream or any of its tributaries that will impede or obstruct navigation? Is not that the substance and meaning of that act?

Mr. ROSENBLOOM. That is correct; yes, sir.

Mr. CLOUSE. Then, the act further provides that the Secretary of War or the Chief of Engineers of the War Department may permit a deposit into any of the navigable streams of the United States or their tributaries when, under certain conditions, he may deem that it is not an impediment or an obstruction to navigation. Now, if that be the existing law, why have we not the power and why have not the people in your district and along the Ohio River and every other navigable stream the power to do the very things that you suggest by your bill?

Mr. ROSEBLOOM. For the simple reason that there is no penalty provided.

Mr. CLOUSE. I would like to know whether or not an amendment of the existing law adding a penalty for the violation of the act would not reach the end you seek in your bill?

Mr. ROSENBLOOM. That is all this bill does. This bill simply adds a penalty, in the discretion of the Chief of Engineers, if his orders fail to be complied with.

The CHAIRMAN. Mr. Rosenbloom, we have listened with much interest to what you have to say, but it seems to us, and I think you will agree with us, that this is the important thing: The Secretary suggests that in this, as in all legislation, it is a balancing of good and evil. You have on the one hand this question, which is a tremendously broad question, which would involve every navigable inland stream in the United States and would involve a great proportion of our industrial plants and many of our municipalities, and the Secretary thinks that no sufficient investigation, so far as his department is concerned, which seems to be the proper department to make the investigation, has been made so as to enable the department to determine on the one hand what harm we would do, how far reaching the harm would be or how we could best minimize that harm; and in the second particular he instances the making of what is now discharged into the navigable streams as harmful matter inoccuous or harmless material. The Secretary says that they do not know and they have not investigated what could be done in that respect and that they have not the data, and it is because we do not know what the effect of this legislation would be and would be legislating in the dark that he recommends that it be confined to oil pollution. Now, you have some witnesses here, I understand.

Mr. ROSENBLOOM. Yes, sir.

The CHAIRMAN. Have you witnesses here who can give expert testimony on those questions?

Mr. ROSENBLOOM. Yes, sir. The admission of the Secretary that he had not investigated this matter sufficiently along the lines that really are important,

to my mind, makes it more necessary that you hear a man who has spent his life in this very work, who knows whereof he speaks, and who is directly chargeable with the proper custody of these very streams that we undertake now to protect, and is also chargeable with the proper custody of the property of the Government in those streams. We have that gentleman here now and I would like for him to be heard on this question.

The CHAIRMAN. You mean Gen. Beach?

Mr. ROSENBLOOM. Yes, sir; Gen. Lansing H. Beach, Chief of Engineers, who is competent, whether the Secretary is or not, to speak on this subject and who is as much an authority on this subject as anyone.

The CHAIRMAN. Of course, we will hear Gen. Beach with very great pleasure, but I would suggest that Mr. Lamb is here and his testimony will be very short, whereas the testimony of Gen. Beach will probably take the rest of the forenoon. Your testimony, as I understand, Mr. Lamb, will be very brief?

Mr. LAMB. Yes; it is simply supplementary to what the Secretary has already said.

STATEMENT OF MR. WILLIAM E. LAMB, SOLICITOR FOR THE DEPARTMENT OF COMMERCE.

Mr. LAMB. Mr. Chairman, the Bureau of Fisheries of the Department of Commerce has made a considerable investigation of the various materials and refuse matters from streams of various kinds located along, we will say, nonnavigable streams that are tributary to navigable waters, both near the coast and in the interior. We have found that there is much deleterious matter from tanneries, pulp mills, sawmills, and mines, brass works and copper refineries, tin-plate plants, chemical works of all kinds, explosive factories and gas works, canneries, and even creameries and cheese factories, distilleries and breweries and dye houses, and also municipal sewage. Those things, of course, have been continuing for a great many years. They have made these discharges into the waters for a great many years, and the effect of them has not been generally determined.

There have been specific instances where there has been some determination of what a particular form of acid would do to the animal life in the water, and where that has been determined, some remedial relief has been brought about; but what we had in mind was that from a general investigation we had made we could not determine yet what form of regulation should be drafted to take care of the pollution, other than the so-called oil pollution, for the reason that investigation probably would show that there were some of these substances that could be handled only by discharge into the water, and such as they might be could undergo some form of treatment before discharge, so that their effect would be neutralized after they were discharged into the water. On the other hand, there were some of these substances that could be taken care of without discharge into the water at all; but all of the investigations, so far as devising means and methods for doing these things, were too indefinite, we felt, at this time to have legislation that was drastic in that it prohibited, practically, these discharges.

Mr. LAYTON. And some of the discharges were practically harmless, anyway.

Mr. LAMB. Yes; possibly. We felt that that was going too far at this time. It is true that some of the bills lodge a discretion in some administrative officer regarding these matters, and to the extent that you leave the question of the discretion resting upon interference with, impeding or obstructing commerce, or that which is detrimental or may be injurious to commerce, in some form of that kind, so that you get away from the mere obstruction and impeding of navigation, there might be some justification for legislation of this sort, but it would have to be clothed in such a way that industry could operate under it, and in fact you would have to take into consideration the facts and circumstances and conditions practically of every industry in order to do that.

The CHAIRMAN. And the task of doing that would be interminable?

Mr. LAMB. Yes. Then your administrative machinery which you would have to set up to take each case by itself would make a result that would be a sort of patchwork and piecework all over the country, and we did not feel we had the necessary information at this time to go that far.

We do believe that whatever form the legislation takes with reference to the oil that it should not be an absolute prohibitive statute in the sense that you say that whoever discharges or deposits oil or oil refuse in the navigable waters of the United States or waters tributary thereto shall be guilty of a

misdemeanor. We believe it should take the form that if it is injurious to navigation or detrimental in any way to navigation or impedes or obstructs it, or if it is in any way injurious or likely to be injurious to the fisheries or those engaged in that industry or to commerce or those engaged in commerce on the navigable waters, it should be unlawful.

Mr. LAYTON. Or where it endangers property?

Mr. LAMB. Or where it endangers or menaces the life or the property of those engaged in navigation, commerce, or fishing.

The CHAIRMAN. We would have to limit it in that way, because we would not have jurisdiction, I suppose, generally over the question of property.

Mr. LAMB. Unless it was property engaged in navigation.

The CHAIRMAN. That is true.

Mr. LAMB. It is possible you could make the law broad enough to cover the property adjacent to the navigable waters that might be menaced or injured by the pollution of the navigable waters in this form.

The CHAIRMAN. I think that would be a reasonable construction.

Mr. LAMB. If you put it in that form, in my judgment, the administrative officer in determining or making the rule which will put into operation the rule declared by Congress—you do not have a hard and fast statutory provision that leaves the court to determine a violation of the law when that fact has been found.

Mr. ROSENBLOOM. Will the gentleman permit me to interrupt for a question?

Mr. LAMB. Certainly.

Mr. ROSENBLOOM. What objection would there be to putting that same safeguard, under those same restrictions and reservations, in the protection of the navigable streams without any further investigation.

Mr. LAMB. For this reason, Mr. Rosenbloom: As I say, these pollutions, other than oil, have been of long duration. Oil pollution on the navigable waters of the United States has become a most important thing practically in recent years, due to the fact of the large increase in the use of oil-burning steamers and barges and the large increase in the use of oil-burning facilities along the seacoast due to the necessities of the war, and where 5 or 10 years ago you saw very little, if any, of the oil pollution, so-called, such as exists to-day in the big harbors of the Atlantic coast, to-day it is a very vital thing and a very menacing thing in its proportions, and that is the reason we believe it is possible to legislate as to that, because we do believe there are ready means and methods of handling that situation due to the method of putting the oil into the ships, which can be operated with very little injury to industry. We have what we believe is a method of doing that, and we do not yet have what we believe is a general method to handle all other forms of refuse matter that may go into the navigable waters. Now, that is the only reason I have.

Mr. ROSENBLOOM. Then, if there was at hand a cheap and proper method of handling this refuse matter that goes into the navigable waters, you would have no objection?

Mr. LAMB. I would have no objection at all to any method they may have that will prevent the pollution of navigable waters, if it can be done by reasonable methods that will not cause more damage than good.

The CHAIRMAN. Mr. Lamb, have you something in the form of a suggestion as to what your department thinks ought to be done?

Mr. LAMB. I have prepared roughly an idea of a bill, but in the matter of draftsmanship I am not satisfied with it at all.

The CHAIRMAN. These hearings will no doubt continue for some time, and suppose you take your time and when you have such a bill prepared send it to the clerk of the committee.

Mr. LAMB. I will be very glad, indeed, to do that, Mr. Chairman. The only thing I care to suggest now is that instead of being an absolute statute that stands like any other criminal statute that this matter is of such a nature that it should be administered by an administrative officer, and a violation of the administrative rules should then be enforced by the courts.

Mr. HAYS. May I ask Judge Lamb a question? In the framing of the legislation you are speaking about, I am wondering whether you think there should be an exception where the escape of the oil is due to a collision or where it was necessary to discharge the oil by reason of a collision or by reason of some accident to the vessel.

Mr. LAMB. Of course, where a thing of that kind occurred or where there was an unexpected catastrophe, where the holding of the oil in a ship would be more dangerous to life and property than its discharge into the water, I should

think some provision should be made for a situation of that kind, because that is simply an unavoidable casualty that should be taken care of by proper regulation.

The CHAIRMAN. In other words, that would be an involuntary discharge.

Mr. LAMB. Yes; something beyond the control of the operator of the ship. Where there would be a greater menace to life and property by following a particular regulation, it seems to me an exception of that kind could well be made.

Mr. CHALMERS. I would like to ask Judge Lamb also about the oil that is discharged into the water from the natural operation and use of the vessel through the cylinders.

Mr. LAMB. I think those things can be minimized. I think there are devices, if you please, that can practically take care of that so that there is really little cause for worry or trouble about it.

The CHAIRMAN. I suppose that is a mechanical and engineering question rather than a legal question?

Mr. LAMB. That is a mechanical question and I presume there is some discharge of the oil around the propellers that probably could not be stopped, but I do not know about that.

Mr. CHALMERS. That was brought out at a former hearing.

Mr. LAMB. If there is anything of that character that it is impossible or reasonably impossible, we will say, by mechanical devices to prevent, there should be some exception for things of that sort.

The CHAIRMAN. We thank you very much, Mr. Lamb.

Mr. CHARLES WHEELER. Mr. Chairman, may I ask the Judge whether in his opinion where methods are known for the practical treatment of waste, should they not be applied now rather than wait for a term of years or until such time when a method or methods may be known for treating all kinds of waste?

Mr. LAMB. Well, I think that your question is applicable to the principle we are announcing here. We think we do know about oil. If there are any methods that we know of or that anyone else knows of that is feasible, we have no objection, of course, to applying the law to them. That is the thing we did not have and that is the reason we suggested the investigation.

The CHAIRMAN. Gen. Beach, will you be good enough to take the stand.

STATEMENT OF MAJ. GEN. LANSING H. BEACH, CHIEF OF ENGINEERS, UNITED STATES ARMY.

Gen. BEACH. Mr. Chairman and gentlemen of the committee, the War Department is interested in securing two results, one to prevent depositing of oil in large quantities upon the waters and the other to prohibit discharge of acids or materials that will form acids after they go into the water.

Before I forget it, I would like to state that I can give you three instances offhand of disastrous fires which have occurred from oil on the water. I did not see any of them personally, but I have talked with various parties who were concerned with each one. One occurred some years ago at a railroad crossing where the Texas & Pacific Railroad bridge crosses the Bayou Teche in Louisiana. The bayou was pretty well covered with oil and the Texas & Pacific locomotive engineer thought that the United States authorities perhaps would not catch him if he dumped his hot ashes into the bayou when he was crossing the bridge. This set fire to the oil on the water and the bridge was burned down, being a wooden structure.

The next case that I know about occurred in the vicinity of Bayonne, N. J., where a man dropped a red-hot rivet into the water and set the oil on top of the water on fire and caused a disastrous conflagration which cost the loss of two or three lives. The last instance occurred a few months ago at New Orleans. This fire was caused by an electric wire breaking and falling into the water, making a short circuit, which set the oil on the water on fire. I have been told by Mr. Jankey, whose dry dock was destroyed at that time—and he was present and saw it—that it went almost like a flash of gunpowder through the whole stretch of that portion of the river covered by the oil. These three are well-authenticated cases, and you doubtless could find a number of similar cases.

Now, I would say with regard to Mr. Rosenbloom's statement concerning the fish in the Ohio that it is an excellent illustration of the condition, we might say, before and after, because the fish work their way up the rivers, and as long as a river is not polluted you are very apt to find fish. While those factories were

shut down the fish had run up the Ohio, and when the acid was put in it it destroyed those fish which had been so rash as to venture up that stream.

You can go out there now or when the factories are running and you will find no fish in the river. That is proof of the condition of the water. The water in the upper Ohio is becoming so acid that there is considerable danger of its affecting the metal work of our locks and dams. The water of the Youghiogheny River, which is a tributary of the Allegheny, coming in a short distance above Pittsburgh, is so full of acid that no vessel man will take his boats up that river without taking a water barge with good water along. One single charge of the Youghiogheny River water into a boiler will corrode it to such an extent that it has to be repaired. This acid in the Youghiogheny River comes almost entirely from abandoned coal mines. They drifted into the hills and the mines were so run or the tunnels were so run from them that they would drain by gravity so as to avoid pumping. It is that water which filters over the coal and finally escapes into the river that is so very acid as to produce this excessive acidity in the Youghiogheny River.

With regard to the existing law, we do not feel that the act of March 3, 1899, is sufficient to meet the present conditions. That law states that parties shall not discharge or permit to be discharged, etc., materials which will impede or obstruct navigation. Those terms "impede and obstruct" are ordinarily considered as physical impediments to navigation, neither of which oil or acid is. It would perhaps cover the case if the words "interfere with or endanger" were added, because that is the effect here of the oil and the acid. It interferes, to a certain extent, with the navigation, and the oil may be sufficient to endanger it.

The CHAIRMAN. What are the exact words you suggest?

Gen. BEACH. "Interfere with or endanger." I am sorry to say that Congressman Rosenbloom was in error when he said there was no penalty attached to that law. The penalty is provided for about three paragraphs further on, and there is a penalty providing a fine for each offense, and, in the case of a natural person, fine or imprisonment in the discretion of the courts.

The CHAIRMAN. Yes; I have found that. That is section 16 and the other provision is in section 13.

Gen. BEACH. Yes, sir; but our difficulty has been that the discharge of oil or the discharge of acids or acid-forming materials into the water does not impede or obstruct the passage of vessels. I encountered this question several years ago when I was stationed at New Orleans in connection with the discharge of the sugar mills into the Bayou Teche. A bayou in Louisiana is a stream which has no water flowing into the upper end and has only such movement or current as may come from occasional rain, and the water is generally stagnant. These sugar mills discharged large quantities of refuse into the bayou which became acid, and as we were going to build a lock there I took the question up with the different mill owners and they all disposed of their materials so as to produce no detriment to the water of the bayou. Some of them discharged it in another direction so that it did not enter the bayou while others put in alkaline treatment so that the material did not become acid.

I do not believe it is advisable to wait, as Secretary Hoover suggested, for a thorough investigation. I am sorry the Secretary did not come to my office and ask a few questions before appearing before the committee, because I think we could give him enough data to show that legislation with regard to acid pollution of water is most important and vital and should not be allowed to continue indefinitely.

The CHAIRMAN. And you have, you think, sufficient of the information which he feels he needs?

Gen. BEACH. We have sufficient information of several very vital localities where we feel that a remedy is necessary at those localities without delay.

Mr. LAYTON. General, I understand that you have been pursuing these investigations for several years. Have you made a differential investigation as to what are deleterious substances and what are nondeleterious substances coming from industries? Of course, we all know that sulphuric acid is such a deleterious substance, but are there not other insoluble compounds and liquid substances that are not really deleterious?

Gen. BEACH. With regard to the insoluble compounds the law is sufficient to-day. I do not need anything else with reference to them.

The CHAIRMAN. And all you are going to ask anyway is with reference to refuse matter that will impede, obstruct, interfere with, or endanger navigation? That is your present suggestion?

Gen. BEACH. I would not like to be held to those words exactly, Mr. Chairman, for the reason that that is just what has occurred to me as being necessary to accomplish the effect, and the exact wording should receive careful attention before it is adopted.

I have learned by talking with several who are here this morning that they are representatives of manufacturing interests, and that they are deeply concerned. It has been my training and it is a part of the teaching of my profession that if you have a difference with a man you want to come to close quarters with him just as soon as possible and settle the matter one way or the other, and I would like to state that I would greatly appreciate it if the representatives of these manufacturers' associations would come to my office and permit me to take the question up with them thoroughly and carefully, because I believe that we desire the same results. I do not think there is any manufacturer who desires to place acids or deleterious substances in the water and continue to do so, and I really believe that in most cases, as far, at least, as the War Department is concerned, a remedy could be very economically and easily applied.

The CHAIRMAN. General, I have two suggestions to make: First, this committee would feel very much better satisfied and we could satisfy the House very much better with reference to any proposed legislation if the War Department and the Department of Commerce would get together, inasmuch as they both appear to be interested, by one going to see the other, or in whatever way you see fit, so that the information in the possession of the War Department may be put in the hands of the Department of Commerce, so that the Secretary of Commerce may determine whether or not that information is sufficient to answer what he says he needs to make the legislation at all general, and then, after that has been done, we should like to hear from the Secretary of Commerce as to his views. Secondly, is not this question very much broader even than the manufacturers—if you are going to have a general bill, is it not going to involve the question of municipal control of sewage as well as the question of navigation?

Gen. BEACH. The question of sewage would be concerned only by the character of the sewage and only transfers the point of application to the Secretary of War instead of on the river bank; that is the only case.

The CHAIRMAN. Every municipality that discharges its sewage into a navigable stream would be affected, because that would probably come within this bill as the language to be incorporated into it by an amendment that is suggested, would it not?

Gen. BEACH. I should think it would.

The CHAIRMAN. Take, for instance, a city like Buffalo and, I suppose, Cleveland—I suppose all the cities on the Great Lakes would be interested; probably Cincinnati and all the cities and municipalities of Ohio; it would all have the question of disposal of sewage involved in it, would it not?

Gen. BEACH. The sewage should not be acid or contain acid-forming materials in sufficient quantity to affect the acidity of the main stream.

The CHAIRMAN. I suppose, however, that the treatment of sewage would be largely along the same lines as the treatment of refuse from the factories?

Gen. BEACH. Really they could treat the outfall from the factory itself before it was allowed to enter the sewer more economically than they could treat the whole mass of sewage, and the city could secure that, or even the United States, if it had the power to do so. That would not affect the discharge of sewage any more than it does to-day. The law permits the discharge of sewage into a stream in its liquid state.

The CHAIRMAN. Now the committee has got to hear what you are going to talk to the manufacturers and what they are going to talk to you. Why can not you say to us now what you will say to the manufacturers, and then we will let them say to us what they are going to say to you?

Gen. BEACH. Yes, sir; I can say to the manufacturers in two or three words that the War Department is not interested in any drastic or unnecessarily expensive measures, that all we desire to secure is the removal of those materials which are excessively acid or form an excessive amount of acid after they are in the waterways. I think that we can always get better legislation if we get both sides interested in the wording and get that wording which will produce the desired result without danger of overstepping the mark that is desired to reach.

The CHAIRMAN. Suppose we leave the wording to subsequent hearings.

Here is a paper manufacturer, here is an iron manufacturer, here is a steel manufacturer, manufacturers of various kinds who are discharging refuse

matter which impedes or interferes with navigation or is harmful to the public health or to those using the streams; under Secretary Hoover's suggestion the question which would interest us is how you will stop that without injuring industry or without injuring the municipality; how are you going to correct that and not do more harm by correcting it? That is the practical question.

Gen. BEACH. With regard to the acid treatment, I think that can be very easily and economically corrected in practically every case by passing the acid discharge through an alkaline chamber. I do not think that the establishment of an alkaline chamber that they may desire to establish would be expensive.

Mr. LAYTON. Would that chamber free the water from the acid?

Gen. BEACH. Yes, sir. I would say this, that the American people are a little peculiar in some ways. They resent and are apt to resent offhand interference with their adopted and usual methods, frequently without stopping to inquire what the result will be. I have had that illustrated many times with regard to flood protection. You get a flood that is unusual and the people immediately begin thinking up methods to prevent floods. At the same time the people in those cities will permit fire destruction right along that is vastly greater than the damage from the flood. They even protest if the police come along and want to make them clean up their back yards. As far as I can ascertain, I was the first municipal officer in the United States to require the theaters to mark all their exits with red lights whenever the auditorium was opened. I did that when I was the Engineer Commissioner here in Washington many years ago. There was the greatest opposition to that, which has now been adopted in every theater in the United States. I had Members of the House and Senators come down and protest to me, trying to get me to abolish that ordinance, because it would cost the theater $200.

The CHAIRMAN. Take a great factory that you know yourself—you need not name the factory if you do not want to—that is discharging substances that are harmful into a stream——

Mr. ROSENBLOOM (interposing). Pardon me, but I have a man who is perfecting a process for some silk people, one of the largest firms in New England, and he can show that with the expenditure of a few dollars that can all be taken care of. He is here, and will be glad to tell you.

The CHAIRMAN. We will hear that gentleman later.

Take that question, if you have in mind some plant of that kind, and give us the output of the factory, give us in a general way what its business is, what it produces, what its gross output is per year, what it would cost to install this correcting chamber which you referred to and to operate it, what percentage that would bear to the total cost of operation of the factory, and that would give us in a practical way what it would mean to a factory, and then if you will give us a small city, if you can do that, that will be fairly illustrative and tell us what it would cost the city to in some way treat the sewage so when discharged into the stream it woud not be harmful.

Gen. BEACH. I can say offhand, Mr. Chairman, that the cost will be practically negligible in every case, for the reason that if the installation is properly made the acid comes in ordinarily in a certain process. If they discharge that acid material into the main mass wholly discharged from the factory, of course it will cost more than if they neutralize the acid before it gets into the other. It might involve—when I said it was negligible I did not mean to say that it would not involve, perhaps, some considerable changes in piping or in adjustment in the factory, but after that is once made the cost of operation of the alkaline chamber ought to be very small indeed.

Mr. DORRANCE. Does that apply to coal mining?

Gen. BEACH. I do not see any reason why coal mines could not adopt that plan without any trouble, because if they are pumping constantly that acid water is not particularly acid. So far as I have been able to find it is only the lower filtration of the water through the coal such as runs out in the stream that is excessively acid. When it comes in from above and comes into the coal mine through the pumps the water is not as a rule particularly acid.

Mr. OSBORNE. The water that flows from the coal mines referred to in a good many instances is from abandoned mines?

Gen. BEACH. Yes, sir.

Mr. OSBORNE. Would not there naturally be a great deal of difficulty in enforcing the system upon abandoned mines?

Gen. BEACH. There might be some difficulty, but I believe that the water could be allowed to flow over some alkali that would neutralize it or that

the old headings could be stopped up. That would be, perhaps, the cheapest way in a good many cases.

Mr. OSBORNE. Underground water, of course, without the mine ever being opened at all, where there was a fall, could pass over the coal beds to some extent in its natural state and would be, I suppose, somewhat acid; that is, would gather the sulphur and produce some sulphuric acid?

Gen. BEACH. If it has not stayed too long in contact with the coal or if it travels through limestone or even through earthy matter it is likely to have that condition changed and the discharge no longer becomes so excessively acid.

Mr. STRONG. I want to predicate my question on a very brief statement. I was not present at the former hearing. I saw that one of the members of the committee said this:

"It has been said by your colleague here that there is not a living thing in the Allegheny River below a certain point."

Looking through the record I find that he evidently meant the Monongahela River.

Gen. BEACH. The Youghiogheny instead of the Allegheny.

Mr. STRONG. Now, in my judgment, there are more coal mines on the Allegheny River and its tributaries—that is, where I live, in my district—than upon any other river probably in the United States. There are a great many abandoned mines. There is hardly a farm in that hilly country in my district where there is not what we call a country coal bank, where the farmer gets his own supply of coal and probably some for his neighbor. This water referred to runs from these country banks as well as from the larger operating mines; as well as from the many abandoned mines. A great many of these abandoned mines were owned by companies that simply leased the coal. The farmer owning the farm has no interest in it and the surface owner has no interest in the water or the mine, except to get the royalties for his coal. We can not reach that man in order to compel him to purify that water. Keeping in mind my statement that there are more coal mines on the Allegheny River and its tributaries, let us look at this, that that district draws its drinking water from the Allegheny River and all the towns along the line do the same thing. Go up to Dams 5 and 4, which you are now constructing, and you drink Allegheny River water if you drink water in the hotel.

When you get up to the mines you will see, at this stage of the river, fishing and canoeing, and that extends from the mouth of the river its entire length. The railroads as well as the mines along that river use river water in their boilers. With this state of facts before you, General, do you not think that this acid which you have referred to must necessarily come particularly from the mills and manufacturing plants rather than from the mines?

Gen. BEACH. I do not recall a manufacturing plant on the Youghiogheny above McKeesport; and the acidity of that stream is greater, as far as I have been able to find out, than on any other piece of flowing water in the United States. The people up along the Youghiogheny have tried to have the river improved so as to make the banks available for factory sites, but as far as I can recall I do not know of a single manufacturing plant on the Youghiogheny above McKeesport.

Dr. PATTERSON. I am Dr. Patterson, of the department of labor and industry at Harrisburg, Pa. I should like permission to interrogate the general, if I may.

The CHAIRMAN. You may proceed.

Dr. PATTERSON. As I understand, there has been a very great change in the Allegheny, Youghiogheny, and Ohio Rivers from acid. I should like to ask how, in your judgment, the public works along those rivers have been affected.

Gen. BEACH. You are asking a question which, of course, it is impossible to answer in figures; but you must remember that the dams in the Ohio River are movable, with wickets 4 feet wide. Every wicket is supported by a movable frame, called a "horse," and held in position when up by a prop. All that metal is subject to corrosion in acid water. I can say that the movable dam on the Trinity below Dallas was so corroded inside of four years that we had to replace the frames in that dam.

Dr. PATTERSON. May I ask, General, whether or not you agree with the following statement which was made in 1918 by the Chemical Alliance, which functioned as a part of the Council of National Defense, and which made an investigation of this subject? I will state to you that the Chemical Alliance, at the request of the Chief of Engineers of the United States Army, found in regard

to the Allegheny, the Ohio, and the Monongahela Rivers as follows—this was made in cooperation with the Chief of Engineers of the War Department.

The CHAIRMAN. How long is it?

Dr. PATTERSON. I suppose it will take 2 minutes.

The CHAIRMAN. You may proceed.

Dr. PATTERSON [reading]:

"A special committee appointed by the President of the Chemical Alliance find upon investigation that section 5 of the above bill, printed in our Bulletin No. 4, was a result of a letter addressed to the Committee on Rivers and Harbors by the Chief of Engineers of the War Department. This letter called attention to the fact that after making careful tests it was found that the quantity of free acid discharged into the Monongahela, Allegheny, and Ohio Rivers amounted to 6,500 tons per day; that the presence of acid and acid salts in the water resulted in the deterioration of boilers and hulls of steamboats and damage to the submerged metal parts of the Government locks and dams. The committee met in Washington on Thursday for a conference with Gen. Keller, of the Committee on Inland Waterways. Some data had been prepared to show what would have to be done to neutralize the acid waste referred to, and what it would cost in comparison with their estimate of damage now being incurred from the waste acid amounting to $57,000 per year. Gen. Keller requested that we confirm in writing the figures that we had submitted, and the following is quoted from our report:

"Confirming the conversation which our committee had with you at your office this afternoon, relative to section 5 of House bill No. 10069, which clause makes it unlawful to discharge free acid or acid waste in any form into any navigable water, it is the feeling of the chemical manufacturers, most of whom are vitally interested in the Government's war program at the present time, that the clause, if put into effect, would either result in the closing down of practically every chemical plant in the country or result in their knowingly operating in direct violation of the law.

"Referring to Report No. 350, page 5, section 5, the statement is made that 6,500 tons of acid is discharged into the Monongahela, Allegheny, and Ohio Rivers each day. To neutralize this acid there will be required approximately 3,250 tons of lime per day, or 1,170,000 tons per annum. This is equivalent to 230 car loads of 34,000 pounds each per day. Sixty-five hundred tons of sulphuric acid per day is equivalent to 2,357,500 tons per annum. This amount of acid is probably at least one-half of the total production of sulphuric acid in the United States at the present time, and it would take $5,000,000 worth of lime to neutralize it, taking lime at $5 per ton at the kiln, not including freight, to cover the loss of $57,000 per annum referred to in the War Department's letter of January 30 in Report No. 350. This amount of lime represents a very large proportion of the total produced in the United States for the year 1917, which, we are informed, amounted to 4,600,000 tons, and this amount of lime required from 2,000,000 to 3,000,000 tons of coal in its manufacture."

I should like to ask the general as to the 3,000,000 tons of coal, as to whether or not that agrees with the finding that was made in 1918?

Gen. BEACH. If I recall rightly, that investigation was made at my request and is supplementary to a report which I made on the matter of the Youghiogheny River. I believe that they could stop up a great many of those mines—I have looked at a good many mines, and that they could keep back the flow of water and in a great many cases neutralize the acidity or counteract it in some way.

Dr. PATTERSON. I should like, if I may, to interrogate the general as to what he believes would be the cost of neutralizing the acid waste water that comes out of the anthracite region of Pennsylvania.

Gen. BEACH. Does that affect navigation?

Dr. PATTERSON. It goes into the streams covered by the bill which Congressman Rosenbloom has introduced.

The CHAIRMAN. What stream have you that goes into the anthracite region of Pennsylvania?

Gen. BEACH. The upper Susquehanna.

The CHAIRMAN. Is that used for navigation?

Gen. BEACH. No; except for moving some sand and gravel in the vicinity of Harrisburg.

The CHAIRMAN. It would not really come within your purview?

Gen. BEACH. I am sure that the War Department would not under present conditions or any that I can forsee be apt to disturb the anthracite coal operators in Pennsylvania.

The CHAIRMAN. Have you anything more to say on this question of the cost to the manufacturers, what you estimate the percentage of cost would be to the manufacturers in the installation of taking the acid out of their refuse?

Gen. BEACH. No; I could not do that. I do not think it would be a uniform figure for all manufacturers, even of the same class, because it would depend on the arrangement of different parts of the plant. It might cost one factory considerably more than another. I could not specify any amount, but that is one of the questions which I should like to take up with the manufacturers' association and go right into those features of the case fully and carefully, because we are not trying to do any harm to them, we are simply trying to arrange matters so they will not do harm to us.

The CHAIRMAN. Have you studied the question of city or municipal sewage disposal as to the cost of the installation of a plant to take the acid out of the sewage?

Gen. BEACH. As I said before, I think the acid should not be allowed to go into the sewage, the city should look after that or the factories may prevent its discharge in large or appreciable quantities.

The CHAIRMAN. Take the sewage proper of the city, aside from the factories, is not that involved in the question also?

Gen. BEACH. No, sir. The War Department is not concerned in that. As far as public health is concerned, it is a difficult and debatable question as to whether all cities should not be required to install some method of complete or partial sewage purification, but the War Department is not concerned in that.

Mr. CHALMERS. I should like to ask the gentleman, if I may, if you stop up the openings, what is going to become of the water; you can not stop the flow of the water by stopping the openings?

Gen. BEACH. It would probably come out at some other locality.

Mr. CHALMERS. But in the same watershed?

Gen. BEACH. It may or it may not.

In Jacksonville, Fla., the water supply of that city is dependent upon artesian wells which they claim comes from northern Georgia or possibly from Tennessee.

Mr. DORRANCE. I am talking about Pennsylvania.

Gen. BEACH. As I said before, if those mine openings were closed so far as practicable, in many cases that water flowing through a limestone region and between limestone, through dirt and gravel and material of that kind, will, by the time it breaks out into the open in the form of a spring, probably have had its acidity greatly diminished.

The CHAIRMAN. I do not suppose that the refuse of mines flows until the mines are working.

Gen. BEACH. No, sir.

The CHAIRMAN. I suppose if you closed the mines up, you would have the waters taken care of in the same way as they were discharged before the mine was worked.

Gen. BEACH. They would probably go back to where they came from.

Mr. LAYTON. I think I must disagree with the chairman about that.

The CHAIRMAN. I am not a scientific man.

Mr. LAYTON. But I will express my opinion upon it, as I do on most things if I want to. I wanted to get this clearly in the record: Before there was a coal mine opened in America I assume that the waters were not polluted by acid to any great extent.

Gen. BEACH. As far as I can find out, that is correct.

Mr. LAYTON. I assume that, chemically speaking, a coal mine, before there is any hole driven into it at all, and when the earth lies over it, and before the oxygen of the air gets into it, does not develop sulphuric acid by reason of any sulphur that is in it, but that from the fact of opening it and letting in the air surcharged with moisture and with oxygen—that is, by the very process of opening it—there is produced a large amount of sulphuric acid that would never have been generated if the mine had not been opened.

Gen. BEACH. I think that statement is correct.

The CHAIRMAN. Then the question of the effect of closing would depend on whether you restored it to its original condition or not?

Gen. BEACH. The point just brought out was a most excellent one, because if you closed a coal mine so that even if the water did not fill the mine the oxygen would go away, and that same water would not generate the amount of sulphuric acid that it does when it flows as a thin stream over the coal and in contact

with the oxygen of the air. I think that point is a most excellent one, and that the water would not become as acid under closed conditions.

The CHAIRMAN. Then comes the question of whether, if it is charged in any other way, it would purify itself.

Gen. BEACH. In the first instance, it would not become acid, and it would also become pure in the other instance.

STATEMENT OF HON. MURRAY HULBERT, DOCK COMMISSIONER, NEW YORK CITY.

Mr. HULBERT. Mr. Chairman, Gen. Beach made a suggestion which, as I recall it, had to do with the inclusion of a phrase in relation to the effect on navigation, and I would like to ask him if he does not think that it would be well to consider, in addition to that, some phrase that would cover the aids or agencies of navigation, because, while oil pollution might not be an interference with navigation itself, it would be indirectly through the fact that it affects the docks and the hulls of the ships, which are the aids and the instruments of navigation.

The CHAIRMAN. He suggested the language "interfered with or endangered."

Mr. HULBERT. I think that perhaps the word "menace" goes further than the word "endanger." I think also that there should be considered the elements or agencies and instrumentalities of navigation, as well as navigation, which in itself is only the water.

Mr. LAYTON. I have been wanting to ask this question for some time: You live in the largest city in the American Union, and this is the day of deification of Henry Ford. You have garages at about every other door in New York City, have you not?

Mr. HULBERT. They will average about that, but we are trying to seggregate them.

Mr. LAYTON. What do you do about the oil that is let out from the automobiles in those garages and that goes into the streets, into the sewers, and out into the harbor?

Mr. HULBERT. We are endeavoring to rectify that condition.

The CHAIRMAN. Is there any considerable amount of that?

Mr. HULBERT. Yes; a very considerable amount of it.

The CHAIRMAN. What proportion would that bear to the direct discharge of oil into the harbor from vessels?

Mr. HULBERT. I would not be able to state it in proportions, but the discharge into the harbor from vessels is greater.

The CHAIRMAN. In other words, you would have to prohibit both of them in order to get relief?

Mr. HULBERT. There is no question about that, and I suggested that in a letter which I sent to the committee and which has already been printed in the hearings.

I would also like to ask Gen. Beach if it is not very largely a matter of administration as well as of law to avoid this question of pollution?. I mean by that the adequacy of the machinery for the enforcement of the law. Now, I can state from my own knowledge that the last time the naval fleet returned to New York Harbor it had hardly dropped anchor in the Hudson River when the ships began to pump oil into the Hudson River. There is no law which can stop them. It can only be done through the administration of governmental agencies that are provided for here in Washington. No matter how much law you gentlemen provide, you are not going to stop this thing if you do not provide the agencies through which that law can be executed.

Mr. LAYTON. The law now provides penalties for that, does it not?

Mr. HULBERT. I think you have too much law. You have not enough machinery with which to execute the law you have now. People do not want to be told what they can not do, but they want to be told how they can do that which they have to do, but which is unlawful at the present time. If you place your reliance upon the law on this subject, you may stifle the development of industry; but if you want to encourage industry in this country, it seems to me that you have got to work in some sort of cooperation with the industries and tell them if they are violating the law or if they are creating a condition, not in violation of law now, but which is a menace to the community, how they can overcome it.

The CHAIRMAN. How will you do that?

Mr. HULBERT. I would suggest that you provide receptacles for your oil, for instance, or enough of them, as one means of avoiding pollution in harbors like New York Harbor. The suggestion comes to us that as a municipality we ought to do it, but that is absurd, because with a harbor such as ours, divided by State lines, it would not make any difference what one side might do for the purification of the water, because if the other side did not act in a spirit of harmonious cooperation all of the good work done on one side of the river would be undone by the failure to have a similar expression of authority on the other side.

The CHAIRMAN. Do you not have unification of control in New York Harbor under the new law?

Mr. HULBERT. You mean as to port authority?

The CHAIRMAN. Yes.

Mr. HULBERT. That is, at present, only a commission to investigate.

Mr. LAYTON. Have you any idea how you could prevent the pollution of water by the oils that come from garages and other places in the city of New York?

Mr. HULBERT. I am not prepared to say how it can be done, but we are working on that at the present time. We are not working on legislation, because we have legislation now that does not get us anywhere, but we are working now on the institution of a system of traps to see if it is a practical proposition to provide mechanism with which it can be done. We think now it can be carried out. We have a committee in New York which is doing that at the present time. We are doing a great many other things: For instance, we have a committee engaged now in the consideration of erecting reclamation plants for the disposal of garbage, which at the present time is being taken out to sea, but which under this bill, if it became a law, would make us indictable as officials of the city of New York for taking refuse out to sea. I recognize that it is very desirable to avoid taking garbage out to sea, but you can not stop taking it to sea until you have some other plan provided for its disposal. The health commissioner, in New York, in addressing an audience the other day at a beach resort or before the resorts closed, discussed this subject and he was told afterwards that they did not want the city of New York to stop dumping garbage at sea because that was what kept the sharks away from the bathing beaches.

We are trying to work that problem out, and we are giving it intensive study, but you can not do those things overnight. That is why I think the suggestion made by Mr. Hoover is a particularly practical one—that is, if you legislate on this subject as far as the investigation that you have already made indicates that you can safely go, you can carry out your restrictive measures to the point of not making them burdensome to the transaction of business, and then you could continue your investigation with respect to the other foreign agencies that enter into the navigable waters until you reach the point where the Government in protecting the waterways and health of the communities and the industries may be able to agree upon some plan that will be workable in terms of law.

The CHAIRMAN. Of course, what we have before us now is the consideration of legislation, and, as I understand you, you think we have enough legislation already.

Mr. HULBERT. Yes, sir.

The CHAIRMAN. That is, with the present information we have, and what you would suggest would be some administrative measures for enforcing the legislation already on the statute books in a practical way?

Mr. HULBERT. I would suggest the clarification of any ambiguous terms in the law as it exists to-day, as suggested by Gen. Beach. Then, I would provide the administrative authorities wtih money and the physical agencies necessary to carry that law out. In the case of New York Harbor, for instance, the supervisor of the harbor, Capt. Hanrahan, called a meeting of the various interests in the city, including the shipping interests, manufacturing interests, and other people concerned, and they formulated a committee of which Mr. Moran is the chairman. He was here this morning, but had to leave to keep an appointment. He will come back this afternoon, and I hope the committee will hear him. He is in Washington now attending a convention which is meeting here, and it may be impossible for him to return here this afternoon, but I hope the committee will give him an opportunity to be heard before the hearings close. This committee or commission that was appointed was merely an advisory body cooperating with the supervisor of the harbor in the matter of devising methods for

improving conditions. It is not for the purpose of securing more law, but for the purpose of perfecting a spirit of cooperation, so as to do more than has heretofore been done to carry out the law you have already given us. I do not want to go into that phase of the matter, because I consider that peculiarly within the province of Mr. Moran, and he will present that phase of the situation.

There is no doubt in my mind that oil pollution is the greatest danger, especially along the improved sections of navigable waterways. There is the conflagration menace, and we have had two fires on the New Jersey side of the port of New York, either one of which, except for plenty of fire protection, might have extended tremendously by reason of the presence of oil. I am told that in the last railroad fire they had over there the existence of an oil pollution aided in the spread of the conflagration to a great extent. A great many of the piers in New York are antiquated. We are working up a plan for their modernization, but that work is necessarily slow. If we had present an unusual discharge of oil in New York Harbor, a conflagration might result that would carry away a considerable proportion of the frame structures on the water front, and it would paralyze commerce. We would like to assure ourselves in every way possible against the possibility of a conflagration of that sort, pending the tearing down in an orderly manner of the existing antiquated water-front structures and their replacement with more modern structures, because we feel that the temporary discontinuance of the use of the existing piers in order to remodel them will place a very substantial burden upon the commerce by doing away with needed facilities. Of course, it would be infinitely worse if the plans for their demolition were extended by a conflagration that would remove them more rapidly than we have planned. I do not know whether anybody has taken up the question of this oil pollution from another standpoint, or not, and that is the effect which it is having upon the beaches. It is not only destroying the fish industry, but is polluting the beaches.

Mr. LAYTON. We had a discussion of that in the first hearings.

Mr. HULBERT. I think that is a very important consideration, because the people look to the beaches as their playground in the summer time. They afford a wonderful relief, particularly to women and children in hot weather, and this pollution certainly interferes with their activities and their pleasures. There have been occasions around New York when people who have gone into the water, after there has been a heavy discharge of oil in the particular region, have had to scrub themselves afterwards in order to get the oil scum off.

Mr. NEWTON. There has been a recent decision by the Federal court in New York City with reference to the oil problem.

Mr. HULBERT. You mean the imposition of a fine?

Mr. NEWTON. Yes.

Mr. HULBERT. There have been several. There was one mentioned in the newspapers the other day.

The CHAIRMAN. Were those cases brought under section 13 of the act of 1899?

Mr. HULBERT. Under this statute there have been several fines imposed, men employed in my department being in some instances the complainants, because I believe there is a provision that one-half of the fine goes to the complainant. However, none of those men have collected their half of the fine, because there is a provision in the city charter that if a man receives any compensation in addition to that paid him by the city he is gulty of a misdemeanor. In connection with this statute I would like to mention this fact, showing the difficulty of enforcing the law: Complaints were made against a number of vessels in New York for discharging oil very deliberately into the waters of the harbor. It developed that those vessels were owned by the United States Shipping Board, but operated for their account by private operators. One case came into court, and the court or the United States District Attorney said that if a fine of $500 were imposed the Government would get only half of it and the other half would go to the complainant, while the Government would have to pay all of it, because the operator would charge it up to the Shipping Board as a part of the cost of operation. The court said that that would merely be a case of robbing Peter to pay Paul, and in cases where the pollution is made by the operator of a United States Shipping Board vessel they simply dismiss the case.

The CHAIRMAN. Do you think that the payment of a fine for the commission of a crime is a part of the operating expenses under any contract for the operation of Shipping Board vessels?

Mr. HULBERT. I should say not.

Mr. RADCLIFFE. They would charge it up to the Shipping Board all right.

Mr. HULBERT. But if the Navy vessels are immune and vessels of the United States Shipping Board are immune, it would create a rather unfair impression on the remainder of the American merchant marine, as well as on operators of ships of foreign registry that come into port, to say that they must pay for the infraction of this particular law.

The CHAIRMAN. General, we did not intend to interrupt you. I do not know whether you had finished with your statement or not.

Gen. BEACH. I had stated all that I desired to say, unless there were some questions. I would like to say in reference to the point raised by Mr. Hulbert, regarding the wording of the law so as to apply to aids and instruments of navigation, that that is just the reason why I stated that I did not think it would be advisable to use this expression that I did use until after further study and consideration as to what the effect might be.

The CHAIRMAN. If it is agreeable to the members of the committee, I think we can go on this afternoon, this being Calendar Wednesday.

Mr. LAYTON. I move that we adjourn until 2 o'clock this afternoon.

Mr. ROSENBLOOM. In presenting my advocacy of this bill I know what the difficulties are, because I have served on committees myself. There are manufacturers who will argue as one point that its cost will be excessive when compared with the benefits that can be secured under it. Now, I have one man to submit to the committee who will reply to all of those objections. There is no question in my mind, and I believe there is none in the minds of the committee, that this would be desirable legislation if it were not impracticable or if the cost of it would not be greater than the benefits derived. That, in my opinion, is the only objection that can be raised.

That being so, I have one man to offer who, in my opinion, will satisfy the committee and these gentlemen that the cost would not be such as to work a hardship greater than the benefits derived. I would like to offer him and then that is all I would have to offer on this matter.

The CHAIRMAN. The committee will recess until 2 o'clock p. m.

AFTER RECESS.

The CHAIRMAN. Gentlemen, the manufacturers, as I understand it, would first like to hear the experts who are to be called by Mr. Rosenbloom. Aside from that, the committee would like to listen to those who feel that they must get away to-day, with the idea of accommodating them so far as it is possible for us to do it. If there are any of you gentlemen who think you must be heard to-day, I will ask you to be good enough to give me your names.

Mr. DORRANCE. Mr. Chairman, representing the anthracite-coal industry, I would like very much to get away this afternoon, as I have to be in New York to-morrow.

Mr. BOOTH. Representing the National Board of Fire Underwriters, I would like to put in the record a few statements about the fire hazard and some fires that have occurred as the result of floating oil.

The CHAIRMAN. Do you want to be heard this afternoon?

Mr. BOOTH. Yes.

The CHAIRMAN. What is your name?

Mr. BOOTH. George W. Booth.

Mr. BAKER. Representing the paper and pulp manufacturers, I would appreciate the opportunity of saying just a word or two this afternoon.

Mr. HULBERT. I would like to make a reservation for Mr. Moran.

Mr. BUCK. I understand there are three or four manufactuers here from Connecticut, and experts on municipal water supplies. They came down in a sleeper last night at a great deal of inconvenience because they are deeply interested in this subject. I can give you their names.

The CHAIRMAN. If you will, give me your name.

Mr. BUCK. Mr. Buck.

The CHAIRMAN. I have here the name of Mr. Earle.

Mr. EARLE. Mr. Chairman, I have a project to offer which, I think, will help as to oil pollution.

The CHAIRMAN. What is your name?

Mr. EARLE. Earle.

The CHAIRMAN. Do you want to be heard to-day?

Mr. EARLE. If you please, sir.

The CHAIRMAN. It would be better for those to ask who really need to be heard to-day, because we can only hear a certain number, and if too many ask we will have to considerably cut down the time, and it might go below the time desired to give a complete expression of your views.

Mr. EMERY. May I ask, on behalf of the National Association of Manufacturers and some 36 State associations, that you hear us if you can? We will present the case very briefly and file supplemental statements, if you desire.

The CHAIRMAN. Is there anyone else?

Mr. WYANT. I represent a district in which many bituminous mines are located, and if their representatives have not already been heard, I would like to ask to bring a number of them here for the purpose of making statements relative to the matter at some future date.

The CHAIRMAN. I would suggest that you leave that request with the clerk of the committee, so that there will not be any mistake, and at some future time have those gentlemen before the committee. Now, Mr. Rosenbloom, if you will produce your experts.

Mr. ROSENBLOOM. In presenting this matter for the consideration of the committee I have undertaken to be as brief as possible in showing the necessity for this particular legislation. I want to say that my district is practically a manufacturing district. This proposed bill has been indorsed by the chamber of commerce there, which is made up of all the manufacturers in the district; it also has the indorsement of numerous individual manufacturers, some of the largest of the kind, such as the Hazel Atlas Glass Co. and the Warwick Tool Co., people who have looked into this to some extent. In presenting this I kept in mind, of course, the objection that would be raised as to whether or not the benefits that would be derived would be commensurate with the expense and inconvenience that would be necessary in order to remedy conditions.

The CHAIRMAN. You would want to make it a little bit more than commensurate, would you not?

Mr. ROSENBLOOM. I thought that was a good word.

The CHAIRMAN. It is a good word, but if it is just an even thing, I am afraid you would not impress the House with its necessity.

Mr. LAYTON. Just use the word "more."

Mr. ROSENBLOOM. I accept the amendment. I have here a gentleman who has devoted the larger part of his life to the handling of this situation. I regard him as an expert. He is working in the State of Ohio in the capacity of looking after their waters, and he can tell you better than I can, of course, just how they have solved this proposition in Ohio and in other States where he has been called in as an expert, Mr. Travers.

STATEMENT OF MR. J. T. TRAVERS.

Mr. TRAVERS. I am employed by the State of Ohio as supervisor of streams, and have been for the past four years. My department was created and I was appointed to make a special study of stream pollution. At that time the pollution of streams was beginning to become a very serious menace in the State of Ohio, in fact, we were making no headway at all. Hundreds of miles of waterways were being so polluted that fish life was at a minimum. So I was appointed to make a study of it, primarily to see if we could not get the streams in such a condition that they would support fish life. At that time we had made studies for seven years and accumulated quite a lot of evidence; in fact, we had hundreds of pounds of it. In making studies of the previous investigations I found that the principal thing that was recommended as a purifier of polluted water was calcium oxide, or quicklime. I further found that was too expensive for the manufacturers to handle; it required too large an installation where they were crowded for room, and, in fact, I soon decided that it was impracticable all the way through. Therefore I tried to see if we could not find something that would take the place of that, and I made experiments. I discarded all the old theories and conclusions that had been accumulated, and instead of putting the various pollutions into 57 different classes, as we had them at that time, we divided them into two; that is, acid and organic, acid and alkali, because most all organic pollution is alkali, which is the opposite of acid.

Acid is put out into our streams from steel mills where they use pickling vats. This is true of tin-plate mills and steel and wire mills; in fact, any mill that uses acid. It also comes from coal mines. When that enters a stream, instead of creating an offensive smell, as the organic matter does

when it decomposes, it consumes the oxygen that is in the water and kills off or drives away all fish life. On the other hand, organic pollution that goes out, say, like sewage, or anything that is manufactured, for instance, anything that comes from a silk mill, a strawboard works, textile manufacturing plants, or slaughterhouses, acts very differently upon the water. It goes out and the heavier particles will sink to the bottom and the stream becomes so loaded that it can not be purified by self-purification, and as a result of falling to the bottom of the stream it will start to ferment and generate a lot of poisonous gases or cause a deficiency in the oxygen and create almost the same condition that acid creates, except that it throws off a very offensive smell.

Another thing I found and what I want to speak about as briefly as possible is what I saw by actual observation. You take in the 22 large coal-producing counties in the State of Ohio, Belmont County being the largest coal-producing county in that State; a strike would occur and they would not be pumping water out of the mines; inside of 10 days or two weeks from down below the other streams the fish would come up in that stream, but just the minute they would start to pump the acid out it would kill off and drive away the fish. The same thing applies to the Ohio River between Pittsburgh and, possibly, Cincinnati. You take the mills. Very recently the mills were closed down or were only working part time; the fish from away below came up the river and then when the mills started up and emptied the acid solution out into the stream it killed off the fish by thousands; yes, tens of thousands; the whole surface of the water was covered with them.

I further found that we would have to develop some practical method. The manufacturers were at sea as to how to treat it. The first installation that I suggested was in the American Tin Plate Co.'s plant at Cambridge, Ohio. At that time we did not know much if anything about marl. We talked the matter over and they made an installation and treated it with lime. We constructed a vat there that cost in the neighborhood of $60; the lime cost them $12 a ton; they paid a man $5.75 a day to slack it; they would use very close to a 1 per cent solution of sulphuric acid and they would use in the neighborhood of 300 tons per day. The superintendent and I, in figuring up the cost of using a ton of lime for the purpose of neutralizing this acid, found that it cost the company $53 and they continued to do it. Then we discovered the marl, and I took 300 pounds of it down there and we dumped it into one of those vats and we got just as good results, if not a little better, from the marl in the same way as we did from the lime, and at a saving of $43 on a ton.

Mr. LAYTON. Is there any sulphate produced and, if so, is there any value to it?

Mr. TRAVERS. You mean the marl?

Mr. LAYTON. I was talking about the acid in your water. By running through lime it turns it into sulphate, does it not?

Mr. TRAVERS. Yes; it precipitates it, but not as a sulphate, and we do not know of any commercial value of that so far, although I have talked with several of the chemists with regard to it, and they have great hope that there will be some. Of course, the sulphate of iron that is taken out of the acid, if they put up a recovery plant, is quite valuable, but it does not really pay for the installation. So we put that in, and that has given very good satisfaction. Now, the American Tin Plate Co. put in another installation close by at their Guernsey mill; they put in an installation at New Philadephia and another one at Canal Dover. The cost of the vats for the marl installation was $50 or $60; they were made out of old lumber. The Mansfield Sheet & Tin Plate Corporation, at Mansfield, followed suit and put in an installation. The creameries—and this goes over on the organic side of it—have recenty put in installations; the Reich-McJunken Creamery Co., of Pittsburgh, Pa., and the Harmony Creamery, with headquarters at Pittsburgh, but they have big holdings in Ohio.

The Hagar Strawboard Works are located—unfortunately for him—on just one stream, the Maumee, and we have no laws in Ohio that will prohibit a man from putting that in, unless we can prove that the pollution from his plant actually kills the fish; then we can apply the law; but where there are two or three located along the same stream it is impossible to determine. The Hagar Strawboard Works have recently put in an installation.

Mr. CHALMERS. Where is that located?

Mr. TRAVERSE. That is near Xenia; it is about 8 miles from Xenia, Ohio.

Mr. CHALMERS. On the Maumee?

Mr. TRAVERS. Yes; on the Litte Maumee. Cedarville, I think, is the place. The system they used was to fill up 20 or 30 acres and hold it in reserve until a storm came up, and then they had a watchman who would turn in a certain amount of it, and as a general thing it would rush down with the water, but, unfortunately, it was let go when no storm was on, and it killed all the fish. He will be able by constructing a vat 100 feet long, 20 feet wide, and 10 feet deep to run his waste through that and discontinue using that large acreage he is using at present, and he will get results; he will put water out in the stream in which fish will live.

There is a great deal of misconception in regard to waste. For instance, you take a strawboard works like the one I was speaking of; they use 30 tons of straw a day to make brown paper; they will mix with that straw anywhere from 5 to 6 or 7 tons of lime; that will be made up into slop, and then it is made into paper, and out of the 30 tons of straw they put in and the lime they put in they get 20 tons of paper and the balance goes out as waste. It is distinctly an alkali and there is no acid. Of course, an alkali solution will kill the fish, and in addition it rots after a while and generates a foul-smelling gas that is always noticeable. This man is going to put in an installation; in fact, he is working on it now.

But to get back to the original subject, although before getting back there seems to be a great deal of stress put upon the matter of pollution in various parts of the country, each community believing it has the worst pollution. For instance, Pennsylvania would enlarge upon copperas water out of the coal mines, the simplest thing in the world, in my opinion, that can be treated and absolutely neutralized, but it is very deadly if it goes into a stream. You take in inland districts, such as Canton, Akron, and those places; there it is generally of an organic character, principally sewage, which makes a stream foul smelling. You take along the Ohio River Valley and it is acid clear through.

An ordinary tin-plate plant will use about a million and a half gallons of water a day—that is, pump it out of the stream—and every drop of the water they use in the plant has got to be treated on account of the plants above; but when he takes that water out all he has to treat—and I am speaking of a tin-plate plant—are the 3,000 gallons or 4,000 gallons—and it runs up as high as 10,000 gallons—that is in the pickling vats, whereas there are a few coal mines right above him that cause him to treat every bit of that water on account of the sulphuric acid it contains. So, therefore, I say that from my experience I do not think it is best that there should be a drastic law enacted, but I believe there should be a matter of cooperation between the manufacturer and the Government in an effort to solve what has heretofore been an unsolved problem.

Now, we will take this sample of water here, for instance. That is the average strength of copperas water as it issues from a mine.

Mr. BARRINGTON. What is your percentage of free sulphuric acid there?

Mr. TRAVERS. I do not know exactly, because it is in the nature of ferrous sulphate.

Mr. BARRINGTON. Is that the average condition of coal-mine drainage?

Mr. TRAVERS. No; it varies, you know, from 30 grains up. I have gotten as high as six or seven hundred grains per gallon.

Mr. BARRINGTON. Grains of what?

Mr. TRAVERS. Grains of ferrous sulphate.

Mr. BARRINGTON. You mean ferrous sulphate?

Mr. TRAVERS. Yes; that is what I mean. Now, in determining as to whether that water contains any acid or not, we have a very simple way of applying the methyl orange test to it. Methyl orange is an acid indicator, and in our department we have 65 men, and if there is any suspicion that a water contains acid, especially sulphuric acid, which might be deadly to fish life, we make a test of it, and take it up with the manufacturer in an effort to see if we can not get him to neutralize it. The cheapest thing I find that will neutralize that acid is this clay. In applying the clay to coal-mine drainage, I do not consider that a vat is necessary. I find that from 3 to 5 pounds of clay which cost in the ground in Michigan and Ohio about 10 cents a ton, but which has to be dried and treated and put in shape to use, that at a coal mine putting out the ordinary run of acid water they will pump quite a volume of water, but quite a lot of the water from the coal mine is harmless, but the water that flows through the old workings of a mine will decompose the iron pyrites and sulphur and create this ferrous sulphate, and then when it goes out into a stream, I have found it so strong that it would eat up a piece of iron in a very short time.

I would lay a piece of iron, for instance, a spike, in the still water and take another spike and put it where the water comes out and nail it so that the water would strike it, and the spike that came in contact with the acid water flowing through would be eaten up in 24 hours, practically eaten all through, whereas the spike that was lying in the still water would show some effect but not nearly so much as the other. So that is the way it is created, by flowing around the old mine, and then it is pumped out, and you can take from 3 to 5 pounds of this clay, which contains from 82 to 93 per cent of calcium carbonate, and which is different from lime when applied to acid water, and you can apply it in water and it will dissolve, whereas if you take quicklime——

Mr. LAYTON. Why do you call that substance clay when it is composed of calcium carbonate?

Mr. TRAVERS. It is considered in the lime class.

Mr. LAYTON. Where I come from that clay is called aluminum

Mr. BARRINGTON. Clay is an aluminum silicate.

Mr. TRAVERS. From an analysis of that piece you will find it is about 82 per cent calcium carbonate. That reacts on the acid, and if you throw 2 or 3 pounds of it where they are pumping water out of a sump hole it immediately reacts upon the acid, and that water, passing out through their pumps instead of burning up the pipe, would be neutralized so that it would have no effect. A great many of the mines have to renew their pumps every five or six weeks on account of being burned out by this acid. To give an illustration of the simplicity of it——

Mr. CHALMERS. Before you leave that subject, I want to ask you a question: What do you use in your testing at present?

Mr. TRAVERS. Methyl orange.

Mr. CHALMERS. I want to ask you if it would not be cheaper and practicable to use some litmus paper or something of that kind, that would show an acid condition?

Mr. TRAVERS. Yes; you could use either one; but I really believe the methyl orange is more sensible.

Mr. CHALMERS. Would it not be more expensive?

Mr. TRAVERS. No; it would not. You would not use more than half a pint of it in a year. This is the way it acts in the copperas water from a coal mine [indicating]. It starts to neutralize it immediately. You will find that in a few minutes all the acid will be gone from this water. If you were close enough you could see the precipitation taking place.

I will now pass through these samples of water and then I want to explain to you the construction of this vat. I heard a gentleman speak of this water I have in my hand. It is what we call a solution of sulphate waste. This is diluted. In our State we do not have any sulphate works, and I never succeeded in getting a true sample of it, but I had some of this sent to me, and it is diluted considerably, and it represents the pulp where it is gotten out of the trees or made out of paper. This will settle down in a few minutes [indicating].

This sample of water here [indicating] is from a dyehouse. It is an experiment that was made for the Cheney Silk Co. recently and is still in operation. They have quite a lot of dyes going out from their plant. In order to get something that will act upon this it is necessary to get a rapid precipitation, and in order to conserve space——

Mr. ROSENBLOOM (interposing). Where are those silk works located?

Mr. TRAVERS. In South Manchester, Conn. They have put out in the neighborhood of 3,000,000 gallons of dye waste a day there. This is what is known as ordinary domestic sewage, which comes out of our sewers.

Mr. CHALMERS. What are you treating that with?

Mr. TRAVERS. A marl clay combination. The largest percentage that is put in it by far is this stuff here [indicating].

Mr. BARRINGTON. That is nothing but putting in calcium carbonate, which is practically the same thing as putting in lime.

Mr. LAYTON. Exactly.

Mr. TRAVERS. I do not agree with you.

Mr. BARRINGTON. What is the difference?

Mr. TRAVERS. There is quite a vast difference.

Mr. BARRINGTON. Explain it, please.

Mr. LAYTON. I do not think there would be any difference except that the carbonate of calcium would be more readily decomposed by the acid than the

calcium oxide, liberating the carbonic acid by quicker union. That is the result of some chemical studies 75 years ago more or less. I do not know whether it is good now or not.

Mr. TRAVERS. The most important thing that is different from using lime is that it is much cheaper and much easier to handle. In using lime you get four times the volume of sludge, which will not dry out readily. Using clay, you will get just one-fourth to one-sixth of the volume of sludge, which can be put in a suitable dewatering tank and then it will dry out readily. We have had it dry out in 24 hours so you could handle it with a shovel, whereas it takes anywhere from a week to 21 days when you use lime.

This sample is dye waste, too. This is about all the pollution I have with me except this steel-mill waste, and I will treat that before I finish and then explain the construction of that vat to you.

This steel-mill waste represents about 1 per cent of sulphuric acid. In the steel mill that this comes from they started in with about a 5 or 6 per cent, and from that to 9 per cent, of sulphuric acid—it varies from day to day—and then they try to work it down as near one-half of 1 per cent or 1 per cent as they can. Of course, it does not pay them to hold it too long. You will notice the action that takes place just as soon as this is put in there. [Indicating.]

At the steel mill that is using this we just drop it into this vat and let the hot acid solution run right out on it and let it stand for a couple of hours. That avoids the necessity of treating all the water that goes out into the stream, because the most of it is comparatively pure.

Now, that will continue to work there until the acid is neutralized in it, and then if it is thrown out on some cinders or allowed to filter through anything at all the most of the iron oxonate which it contains is kept out of the stream and the stream is kept from being diluted.

With reference to this coal-mine waste, to show you how quickly the acid in it is neutralized, we will apply the same test to it. It will turn to orange. That is a sure indication that the acid is gone. That is all the coal mines would have to do. As soon as they throw it into the sump hole, simply throw 3 to 5 pounds in for every 1,000 gallons of the pumping and they would neutralize the acid and then it would come out into a broad place where it would slow up and this stuff would all settle out and the water would go into the stream and do no harm.

Mr. DORRANCE. Mr. Chairman, may I ask the gentleman whether he has any idea of how many tons of acid water are produced in the anthracite regions of Pennsylvania in a day?

Mr. TRAVERS. No; I do not believe that anybody has that figure accurately.

Mr. DORRANCE. We have very accurate figures. We pump to the surface in the anthracite regions of Pennsylvania approximately 3,000,000 tons of water a day.

The CHAIRMAN. And how much of this solution would it take?

Mr. DORRANCE. Our figures for the whole anthracite region show that the cost of alkali alone, outside of any other expense, would be, approximately, $10,000,000 a year.

Mr. TRAVERS. Speaking of the water that is pumped out of a coal mine, my experience in coal mines goes to show that all the water that comes out is not acid. It is perfectly harmless. The mines we have throughout Ohio will pump anywhere——

The CHAIRMAN. You do not quite mean that. You said that all the water that comes out of the mines is not acid; that it is perfectly harmless.

Mr. TRAVERS. A large proportion of the water that comes out of the mines, or a large percentage of it, is comparatively harmless. I have drunk water at a coal mine.

Mr. WYANT. How would you separate the different water? Suppose you had a mine which produced 30,000 tons of this water—as I know is the case in my district—how would you attempt to treat a portion of the 30,000 tons of water?

The CHAIRMAN. I think what the gentleman means is how are you going to separate the harmless water from the water that is saturated with acid?

Mr. LAYTON. In other words, you would have to test all the water that comes out in order to find the water that is harmless?

Mr. TRAVERS. No; I do not agree with you. There are quite a number of openings in coal mines where water comes out that is comparatively harmless, but the water that is allowed to flow through the old workings to these sump holes takes on this acid condition, and that water before going out should be treated.

Mr. DORRANCE. Mr. Chairman, all the water in the anthracite coal mines drains to large sumps in the mines, where it is all mixed and pumped out.

The CHAIRMAN. By sump you mean a hole?

Mr. DORRANCE. Yes; a big underground reservoir.

The CHAIRMAN. A natural reservoir?

Mr. DORRANCE. Does this gentleman mean we would have to install pumps for every underground current in the mines and operate them? That would be perfectly impossible..

Mr. WYANT. I would like to have the gentleman explain this matter. Take a mine in the State of Ohio producing 30,000 tons of water a day, how do you attempt to treat that?

Mr. TRAVERS. We are not using it in the coal districts of Ohio on account of the newness of it.

Mr. WYANT. Then you do not advocate this for the purpose of purifying water coming from coal mines?

Mr. TRAVERS. I surely do, and I say it can be done, and done cheaply and in an economical manner.

Mr. WYANT. Will you then explain to this committee how you propose to treat economically, say, 30,000 tons of water coming from a single mine each day, and if you have had experience I wish you would state how much it adds per ton to the price of coal.

Mr. TRAVERS. I would not be able to give you those figures, because I do not know, but I do say that we are using something to neutralize the acid there that has never been used before, and in Michigan it sells for 10 cents a ton. Now, you would not use to exceed from 3 to 5 pounds of it for every 1,000 gallons of water you would treat.

Mr. WYANT. Did you figure in freight rates in case you shipped that material to eastern Pennsylvania?

Mr. TRAVERS. Eastern Pennsylvania has deposits of this stuff the same as Michigan and Ohio.

Mr. LAYTON. What is the present price of it?

Mr. TRAVERS. In a great many parts of Michigan and in the State of Ohio they make roads out of it and the farmer charges the contractor at the rate of about 10 cents a ton. At a great many other places where they produce it, where it runs higher in calcium carbonate they sell it as a fertilizer to the farmers direct.

Mr. RADCLIFFE. Mr. Dorrance made a statement in which he said it would cost $10,000,000 a year. Do you mean to purify this water?

Mr. DORRANCE. I mean it will cost $10,000,000 a year simply for the alkali to purify it, not including the operating charges at all.

Mr. RADCLIFFE. How many million tons of coal a year do you mine?

Mr. DORRANCE. You are trying to get it down to a ton basis?

Mr. RADCLIFFE. Yes; you made that statement, and I would like to know what the cost would be.

Mr. DORRANCE. It would cost about 50 cents a ton. That is not for the alkali but is for the whole operation. That is double the alkali cost.

Mr. WYANT. I would like to ask the gentleman another question, if he will permit. This condition prevails in western Pennsylvania: Corporations were formed many years ago and exhausted the coal underlying great areas of land. Those corporations are dissolved. The owner of the surface has no interest in that water, and yet hundreds of thousands of tons of sulphur water are flowing from those mines into the rivers. What are you going to do about that?

Mr. TRAVERS. I will agree with you that that is true and that there should be some arrangements made whereby those old workings that have been abandoned and are of no further use would be sealed up. When they are sealed up properly, the acid water and the sulphates in there are heavier than the spring water, and they would rise to the roof. Of course, some of the parts of the mine would fall in, but that water would rise up through the ground and come in contact with the limestone and the calcium carbonate and magnesia and different things in the earth and would burst out on top in the spring and would be neutralized.

Mr. WYANT. I would like to ask the gentleman if he ever had any experience in sealing up an old mine.

Mr. TRAVERS. I have never sealed up any, but I have been in mines that have been sealed up; in other words, we will take, for example, one of the first mines that was opened in Belmont County, along about 65 years ago. They worked out all the coal, and they sealed up that mine. That mine filled up

with water, and they opened a mine right alongside of it where occasionally the miners would bore a hole clear through into the acid water. They sealed it up there for their own benefit and there is no reason why they could not be sealed up on the outside.

Mr. LAYTON. Whom would you have to do the sealing?

Mr. TRAVERS. That is the question. I do not know.

The CHAIRMAN. We covered that question, Mr. Wyant, somewhat this morning with Gen. Beach and some of the other witnesses.

Mr. TRAVERS. That is the only logical conclusion I would come to in regard to it. Now, they speak of coal-mine drainage and acid.

I do not believe it represents over 10 per cent in volume of the pollution that is going on throughout the United States when compared with organic matter such as sewage, water from textile mills, tanneries, creameries, and everything that is so offensive. In a great many of those cases they will have the advantage over the steel industry and the coal-mine industry in that they will be able often to recover a by-product in the way of fertilizer or fertilizing elements that will more than pay for their treatment.

The CHAIRMAN. As a by-product.

Mr. TRAVERS. Yes. In Crossings, England; Hamburg, Germany; and Norwich they use chemical precipitation along this same line, but they use calcium oxonate as a precipitant, and the result of it is that they get an enormous volume of sludge. That is pretty hard to handle, I will admit. In Providence, R. I., and in Worcester, Mass., they use chemical precipitation, but the great big problem in all of those cases where they use lime is the sludge problem. In using the clay we get a more compact, solid amount of sludge, and the water drains off of it readily, so that you can handle it with a shovel.

Mr. LAYTON. I want to ask you a question right there: When these hearings are read by the general public, or by the other Members of Congress, I think it will be misleading to see that substance called clay. If I understand anything about it at all the principle ingredient is lime or carbonate of lime; is not that so?

Mr. TRAVERS. In the dictionary description of it it says: "Marl, a clay substance."

Mr. LAYTON. I do not care what the dictionary says. Marl is composed of decomposed carbonate of lime in the shape of fish or shells, or something of that kind.

Mr. TRAVERS. Yes; we have them right in this piece here.

Mr. LAYTON. Chemically speaking, aluminum would not have any disinfecting power at all, would it?

Mr. TRAVERS. No.

Mr. LAYTON. Well, clay is aluminum. That I will stick to.

Mr. TIEBNEY. Mr. Chairman, may I offer an observation? The gentleman has been called as an expert by Congressman Rosenbloom. He is now presuming to give scientific testimony. I think it would be well if he should qualify as a scientist, or, at least, submit his experience. I think that is essential for the record.

Mr. ROSENBLOOM. I will reoffer him, then, as a practical demonstrator rather than as a scientific expert, in order to get results.

Mr. TRAVERS. I am here only to give the results of my observations in coming with actual contact——

Mr. LAYTON. I will ask you the question—are you a graduate chemist?

Mr. TRAVERS. No, sir.

Mr. LAYTON. Neither analytical nor synthetical?

Mr. TRAVERS. No; I have just made a special study of this for the State of Ohio, with the result that we have installations——

The CHAIRMAN (interposing). I suppose you have chemists on your force, have you not?

Mr. TRAVERS. No; our object is to treat the water with a substance that will make it harmless.

Mr. CHALMERS. I think the fact he is from Ohio will qualify him.

Mr. TRAVERS. Our object is to get the water in such shape that fish will live in it. We find from experience that chemically-treated water that is furnished for drinking purposes fish do not prosper in, and we have fish hatcheries located right along chemical plants where we treat our drinking water, and we pump the water right from the river.

Mr. LAYTON. Have you ever had that stuff analyzed?

Mr. TRAVERS. Yes.

Mr. LAYTON. What does it contain?

Mr. TRAVERS. This piece contains 82 per cent calcium carbonate.

Mr. LAYTON. That is carbonate of lime?

Mr. TRAVERS. Yes.

Mr. LAYTON. You call it clay, but with all due deference to the gentleman from Ohio, if you will look up the word "clay"—I do not profess to know all about chemistry——

Mr. TRAVERS (interposing). We will not argue about it.

Mr. LAYTON. But that is aluminum.

Mr. TRAVERS. We want to get something cheap to cause precipitation of the organic matter out of the water, and you can readily see that by putting that much carbonate of lime in water you will get that result.

The CHAIRMAN. If you will be good enough to do so, suppose you tell us in a brief way how extensive your work has been in Ohio.

Mr. TRAVERS. It has only been recently that we have developed this calcium carbonate. As I said before, the first installation was made by the American Tin Plate Co.

The CHAIRMAN. How long ago was that?

Mr. TRAVERS. That has been about four or five months ago.

The CHAIRMAN. And how large a plant have they at that point?

Mr. TRAVERS. They use 1,000,000 gallons of water a day in their industry. They have to treat out of their pickling vats 3,000 gallons of acid waste like this [indicating] a day. Now, that is dumped all at once and is neutralized before it goes out. It is so satisfactory to their chemists that they have made another installation at Guernsey Works. Then they have made another installation at New Philadelphia and one more at Canal Dover, and the Mansfield Sheet & Tin Plate Co. has made installations and are using it.

The CHAIRMAN. How large an output do they treat?

Mr. TRAVERS. The Mansfield people will treat about 7,000 gallons per day, but the other mills treat on an average of three of four thousand gallons.

Mr. ROSE. Will you allow me to offer a suggestion? I am very much interested in the hearings upon this bill and I represent a district which is largely interested in coal mines. I have noticed that the word "clay" has been often used and there appears to be a difference of opinion about it. I would just like to suggest to the gentleman that it would perhaps help us in Pennsylvania, in the bituminous coal districts, if he would make use of the words "hard clay" or "soft clay." We make brick out of clay and we have two kinds of clay. We have soft clay and we have hard clay, and we know what is meant by those terms. I have never heard of the word aluminum being substituted for the word clay in central Pennsylvania.

Mr. LAYTON. You want to look it up.

Mr. ROSE. But we all understand the other terms, and as there is a dispute about it, I am just wondering whether that suggestion would clarify the situation so we would all understand it.

Mr. TRAVERS. The term is covered by the word marl.

The CHAIRMAN. He does not call it either aluminum or clay, but marl.

Mr. TRAVERS. Yes.

The CHAIRMAN. You had started on an enumeration of certain plants and you had given us three, and the first one used 3,000 gallons.

Mr. TRAVERS. And the next one about 3,000 gallons.

The CHAIRMAN. And the next, 7,000?

Mr. TRAVERS. Yes; and the Mansfield plant has two installations. They have two very large mills and each one takes care of about 7,000 gallons a day, which would be 14,000 gallons, and the Canal Dover plant has between three and four thousand gallons; that is, of the acid solution, they will use in the neighborhood of 300 pounds for one day's supply.

The CHAIRMAN. Have you any suggestion to offer—Mr. Dorrance is going to be the next witness—in answer to Mr. Dorrance's question as to the quantity of sulphuric acid water that issues from the anthracite region of Pennsylvania every day?

Mr. TRAVERS. My experience has been confined strictly to Ohio and I could only answer from that point.

The CHAIRMAN. What I mean is this: Mr. Dorrance says it is going to cost the industry $15,000,000 a year and that it is going to cost at the rate of 50 cents per ton to apply this method to the purification of the water. Now, of course, we must look at this from a practical standpoint. What have you to say in answer to that statement?

Mr. TRAVERS. I think those figures are really wrong, for this reason, that it would be almost impossible to determine how much marl it would take, for the reason that we would not know the acid strength of the water. Now, if the acid strength of the water was comparatively small, the average would be from 3 to 5 pounds per thousand gallons pumped. In my district in Ohio they pump from ten to thirty thousand gallons per day.

Mr. LAYTON. Is the whole State of Ohio composed of marl?

Mr. TRAVERS. You find it in many parts of the State.

The CHAIRMAN. How much to 1,000 gallons?

Mr. TRAVERS. From 3 to 5 pounds.

Mr. BARRINGTON. What kind of water?

Mr. TRAVERS. Seventeen per cent or eighteen per cent sulphide.

Mr. BARRINGTON. No free acid?

Mr. TRAVERS. There is marl without any acid in it, too.

Mr. BARRINGTON. You have not the figures and you do not know?

Mr. TRAVERS. I do not know that.

The CHAIRMAN. We appreciate very much what you are giving us, but please hasten along.

Mr. TRAVERS. I am just about through. I want to say this, that in the last month I have made an experimental demonstration for the Cheney silk people, who have spent an enormous amount of money trying to control their dye waste, and this is an exact reproduction [indicating] of the tank that we built, 20 feet high, 10 feet wide, and 5 feet deep. We are getting very good results. Of course, we are not ready for publication yet. It seems to be very gratifying. Mr. Cheney, the president of the firm, is here, and, of course, if he has anything to say to you he can.

I thank you.

Mr. ROSENBLOOM. Please explain that tank.

Mr. TRAVERS. The idea with manufacturers all over the country is that they are sometimes cramped for room and they have to keep up a continuous flow. We take a tank like this [indicating], which is constructed so that the water charged with the clay feeds in so many grains per minute, about 3 to 5 pounds per 1,000 gallons. The thought behind that is that it will come in here [indicating] and go down, downward clear to the bottom, and then before it can get over here [indicating] and communicate any vibration to this, it comes here [indicating] and across here [indicating], and down again. The result of its going down continues a sort of worm effect and the clay makes the organic slugs heavier and the marl makes the organic matter heavier, and that keeps them down. The result of that is that we have the water going down here clear. Any grease or oil comes right against this [indicating] and is skimmed off and the water is going down pure. Any fish in the tank here get along very well, but down here [indicating] they would not live at all.

Mr. ROSENBLOOM. What would be the cost of the installation of a tank?

Mr. TRAVERS. A tank for a creamery, say, 50 feet long, 20 feet wide, and 10 feet deep—we always like to have one hour's detention——

The CHAIRMAN (interposing). That would depend on the creamery?

Mr. TRAVERS. Yes, sir.

Mr. ROSENBLOOM. What would it cost to install a tank 50 feet long, 20 feet wide, and 10 feet deep?

Mr. TRAVERS. I do not know. I have the figures of one that they are putting in for a company that is to cost about $1,400.

Mr. DORRANCE. What would be the size of a tank for a flow of 5,000 gallons a minute?

Mr. TRAVERS. We do not have any manufacturers using that much water. The Cheney Silk Co. puts out about 3,000,000 a day. The tank installed is probably 50 feet long, 20 feet wide, and 10 feet deep, and that would take care of 750,000 gallons an hour.

Mr. WYANT. What does the State receive in return for all the terrific expense imposed upon it for purifying the water?

Mr. TRAVERS. It is not only the benefit to the manufacturer but it is a benefit to the fishing industry and everything.

Mr. WYANT. Do you think that it would be a wise thing to impose an expense upon the mining industry of Pennsylvania costing many, many millions of dollars a year, when they would receive but few, if any, fish?

Mr. TRAVERS. Until it is tried even in a small way it is impossible to tell whether it will work a hardship or not, but I find in Ohio that 70 per cent

of the manufacturers do not require a law to compel them to put something in once they know of it.

Mr. WYANT. I am speaking entirely of the mining industry; I do not know anything about manufacturing.

Mr. TRAVERS. Really, we can not deal with just one industry.

Mr. WYANT. I want to say that these proposals are indeed alarming to the operators of mines in our section, and I think it would be impossible to comply with any such law.

Mr. DORRANCE. You can not neutralize the water in a mine.

Mr. TRAVERS. That completes the description of the tank.

The CHAIRMAN. We are much obliged to you, Mr. Travers.

Mr. BARRINGTON. May I make one statement, Mr. Chairman.

The CHAIRMAN. Yes, sir.

Mr. BARRINGTON. Mr. Chairman, I should like to call attention to the fact that Mr. Travers's testimony supports fully Secretary Hoover's position that before legislation is put into effect, as far as coal-mine drainage and industrial plants water pollution is concerned, the situation demands thorough investigation.

The CHAIRMAN. There is no question about that.

Mr. RADCLIFFE. I do not think so entirely; that is a definite statement.

The CHAIRMAN. That is what I mean.

Mr. ROSENBLOOM. This bill does not do it, but, in accordance with the suggestion of Gen. Beach, proper power should be given to the department, either the War Department or the Department of Commerce, to issue such rules and regulations as will remedy this condition, because it is going to become more acute if it continues; there is no question about that. Not to pass an absolute statute the violation of the terms of which will mean an offense, but to empower a certain department of the Government with the right to prescribe the rules and regulations the violation of which, at the instance of the department, will be subject to punishment, and vest with some branch of our Government the right to go in and undertake to remedy this condition as speedily as possible. In other words, that the discharge of deleterious matter will not be the offense, because until the department has formulated some plan which they can incorporate in their rules and regulations, that may continue to exist. Then, on the formulation of the remedy which, of course, is bound to be reasonable, failure to comply with the rules and regulations, at the instance of the department that is vested with authority, that will constitute an offense that can be taken into court.

The CHAIRMAN. Primarily, the executive can not fix a crime; it must be fixed by the law-making body. The second thing is this: I think you and everybody will want a full investigation. I do not think that we ought to legislate without making such investigation as we can. I think we all agree that we ought to know pretty fully what we are doing before we attempt to formulate legislation.

Mr. ROSENBLOOM. Except to this extent. I would not advocate the passage of an express statute the violation of the terms of which statute would be, per se, a crime, but I would advocate that some department of the Government, either the Department of Commerce or the War Department, be constituted the authority.

Mr. LAYTON. To have arbitrary right over the liberty of citizens?

Mr. ROSENBLOOM. No; that is out of the question. Before anything can be done there has to be an indictment, but the point that I want to get at is that they have the authority to issue such rules and regulations as they believe will meet the condition.

The CHAIRMAN. I understand your proposition fully, but as a lawyer—you are a lawyer?

Mr. ROSENBLOOM. Yes, sir.

The CHAIRMAN. As a lawyer, an executive department can not define or make a crime?

Mr. ROSENBLOOM. That is true.

The CHAIRMAN. That must be done by a lawmaking body. The difficulty in your suggestion, it seems to me, is just there, that you are suggesting that we allow some secretary to determine what is crime and to punish for that crime. I think the lawmaking body has got to find out and by statute define and make certain acts constitute a crime.

Mr. ROSENBLOOM. Why can not the War Department, with limitations, for instance, be empowered to issue such rules and regulations as they think neces-

sary for the protection of Government property on these streams and that violation of the rules and regulations, the whole thing itself, will create an offense?

The CHAIRMAN. That might be done, but I should doubt it very much. You could not delegate that authority to an executive department.

STATEMENT OF MR. CHARLES DORRANCE, VICE PRESIDENT THE HUDSON COAL CO., SCRANTON, PA.

Mr. DORRANCE. Mr. Chairman, in order that I may qualify as a witness, I would state that I am the operating vice president of an anthracite company which operates approximately 30 coal mines in the anthracite region of Pennsylvania and produces approximately 9,000,000 tons per year, or 12 per cent of the total anthracite production.

I appreciate that it was not Mr. Rosenbloom's idea, in drafting his bill, that it would prohibit the long-continued custom of allowing the drainage and pumpage mine water from the anthracite mines to enter into the streams of the anthracite region. But we feel that the bills, if they are to be enacted, should be amended so as to make it clear that they are not intended to make it unlawful for mine operators to allow mine waste to enter the streams in their acid state.

The CHAIRMAN. Was not Gen. Beach's suggestion along that line that there was no navigable stream in the region of anthracite production?

Mr. DORRANCE. Gen. Beach was entirely wrong. All of these pollution bills, as drafted, might make the laws apply to the tributaries of navigable streams as well as navigable streams. Practically all of the drainage of the anthracite region empties either directly or indirectly into the Susquehanna or Delaware Rivers, both of which are navigable streams.

I would refer your committee to two very authoritative studies on the question of the effect of acid mine water into the streams and rivers of the anthracite and bituminous regions of Pennsylvania. The first is water supply paper No. 108, of the United States Geological Survey, which shows quite conclusively that acid mine waste entering the streams and rivers in the anthracite fields of Pennsylvania plays an important and beneficial part in bettering the sanitary conditions of all these waters.

I make two pertinent quotations from this authoritative investigation:

"The Susquehanna River could not be used in the raw state for household purpose if no mine drainage was turned into it.

"The purifying effect of the acid mine waste will prevent it (the Susquehanna River) from becoming a nuisance and a damage to realty values."

I would also refer you to the Journal of American Water Works Association May, 1921, pages 201–217. This article fully corroborates and confirms the investigation of the United States Geological Survey by means of the results of tests made by the Corps of Engineers in the United States Army and applying to the mine waste in the bituminous fields of Pennsylvania.

The CHAIRMAN. I understand the second quotation from the Water Supply Paper, No. 108, states that the acid mine waste going into the Susquehanna River prevents possible heavy damage to realty values.

Mr. DORRANCE. Yes, sir; realty values. That is simply the question of the neutralization of the sewage by this acid water going into the river.

The CHAIRMAN. I am not sure that I understand you. I understand that you have two things. First, the water would not be potable or could not be used for domestic purposes if you did not put any of your mine acid water into it. and, therefore, that your refuse does affect it favorably.

Mr. DORRANCE. Yes, sir. That is the finding of these two authoritative organizations and is a fact. Because of the action of the acid mine waste on the waters contaminated by sewage, the sewage is neutralized and the water made fit for use in the Susquehanna River.

Second, I think the majority of the members of this committee come from anthracite consuming states and it is needless to tell them that there is every reason for trying to keep down the cost of anthracite coal to the consumer.

Mr. CHALMERS. Will you allow an interruption?

Mr. DORRANCE. Certainly, sir.

Mr. CHALMERS. In understand, the neutralization of mine waste would necessitate an increase of 50 cents per ton in the cost of anthracite.

Mr. DORRANCE. Yes, sir. Approximately that figure.

Mr. CHALMERS. What per cent would that be of the present operating cost?

Mr. DORRANCE. That would be about 10 per cent.

In order that the committee can understand the expenditure necessary, if these measures should be held to prohibit the present methods in the anthracite districts, we have prepared a detailed estimate covering the initial cost and the annual operating cost. To do this, we took the entire property of this company and figured out both initial cost and annual operating cost, then applied it on a tonnage basis to get a figure for the entire anthracite region, as the conditions are no different with the other properties than our own.

The total initial cost for installation	$39,000,000
Annual operating cost	18,000,000

The actual details of this estimate can be made available to your committee if it so desires.

I personally feel that the engineers have erred in making the figures at least 20 per cent too low.

As a short explanation of these figures, I would simply say to you that you must appreciate that in the production of anthracite coal, 15 tons of water are pumped for each ton of coal produced. Therefore, the question is the neutralization of 15 tons of water for every ton of coal produced.

The gentleman who has testified to you concerning the question of pollution in Ohio spoke of neutralizing from 30,000 to 60,000 gallons per day. I submit to you gentlemen, that for the anthracite region of Pennsylvania, the question is the neutralization of 600 000 gallons per minute or 700,000,000 gallons per day. as a figure which corroborates the enormous expenditures which I have given you.

This enormous cost would probably fall entirely on the consumer of domestic sizes of anthracite, and the figures indicate it would bring an increase of approximately 50 cents per ton.

The only possible benefit of this enormous expenditure would be that there might be possible some small amount of fishing as a sport, not as an industry, in the upper streams of the Susquehanna River and other streams in the anthracite regions. The water, as it goes down to the sea, is entirely neutralized by the natural action of the streams long before it would affect any commercial fishing.

Mr. ROSENBLOOM. What percentage of your production is used for domestic purposes.

Mr. DORRANCE. About 60 per cent.

Mr. ROSENBLOOM. And why would that put an additional charge on the domestic sizes.

Mr. DORRANCE. For the simple reason that the steam size anthracite is sold in direct competition with bituminous coal and we could not increase its price.

The CHAIRMAN. It looks to me as if your question was simply this: Whether the navigable streams are affected when this discharge reaches the point where they are navigable. I do not see how we are interested or why we should not, so far as Congress is concerned, exclude expressly anything above the navigation point. That is offhand, and the committee may not agree with me.

Mr. DORRANCE. I quite agree with you, Mr. Chairman. All we want to bring to your attention is what would happen if you made these bills apply to our anthracite mining region.

The CHAIRMAN. I may not be right on reflection, but I should say offhand that that is the way it appeals to me.

Mr. CHALMERS. The price of coal is about $5 per ton?

Mr. DORRANCE. No, sir. That is the operating cost.

Mr. CHALMERS. Where delivered?

Mr. DORRANCE. That is the operating cost of production, it is in the neighborhood of five or six dollars per ton. The domestic sizes of coal are sold for $8 per ton. The steam sizes of anthracite are sold as low as $1.50.

Mr. CHALMERS. Where can we get some of that coal?

Mr. DORRANCE. You can not use that coal for domestic use. You would have to use a forced draft and boilers.

Mr. CHALMERS. I was just wondering whether there was any of the increase in the transportation.

Mr. DORRANCE. The increased transportation cost takes a very large share of the cost to the consumer.

The CHAIRMAN. We are very much obliged to you, Mr. Dorrance.

Mr. DORRANCE. It would appear that if the bills were enacted as drafted, their enforcement might—

1. Be seriously detrimental to the thousands of communities where coal is mined,

2. Necessitate a large and unnecessary increase in cost of coal to the hundreds of thousands of consumers.

3. Be entirely without benefit (where coal mining is involved) to any person, industry, or community of our country.

The committee would be justified in so amending the bills that there can be no possible chance of their being construed to apply to the anthracite mining industry.

STATEMENT OF MR. JAMES A. EMERY.

Mr. EMERY. Mr. Chairman, I am representing at this hearing the National Association of Manufacturers, composed of some 6,000 individuals, firms, and corporations, in substantially all of the States of the Union, employing in normal times approximately 2,500,000 to 2,750,000 men, and some 36 State associations of manufacturers, comprising in membership 25,000 manufacturers, who are, of course, keenly interested in the proposals which have been submitted to this committee, keenly interested not from a protestant standpoint but from a constructive standpoint. All of the manufacturers with whom I am familiar have expended various sums in the endeavor to meet the very problems that have been presented with so much confusion and disagreement in the course of these hearings. There are individual plants where the people have spent very large sums of money. There are men in this room who have spent $300,000 to $350,000 in undertaking to meet this very problem, who have employed the gentleman who has been before you as an expert, and who are as much interested in the successful outcome of this experiment as anyone in a legislative body could be.

I think, Mr. Chairman, if you will permit, I will call your attention, if I may, first of all to the state of the law as it is to-day, as there seems to be very considerable confusion of mind as to what the law is now on the Federal statute books. If I may, there are substantially two statutes involved in this discussion, one that applies to the harbor of New York and its tributaries, and the other is the act of March 3, 1899, enacted as a part of the rivers and harbors appropriation act of that year, included in sections 13 and 16 of a statute which is general in its character and applies to the navigable waters of the United States.

I assume that your committee is interested, first of all, in determining what additional legislation is necessary, if any, to meet the conditions which have been presented to you.

Let me first call your attention to the act of June 29, 1888, an act to prevent obstructive and injurious deposits within the harbor and adjacent waters of New York City by dumping or otherwise, and to punish and prevent such offenses.

The second statute substantially includes sections 13 and 16. (30 Stat. L., 1152–1153.)

The first statute applies to New York Harbor exclusively and its tributary waters and it forbids the discharging or depositing, by any process or in any manner, of refuse, dirt, ashes, cinders, mud, sand, dredgings, sludge, acids, or any other matter of any kind, other than that flowing from streets and sewers and passing therefrom in a liquid state, in the tidal waters of the harbor of New York or its adjacent tributary waters, or in those of Long Island Sound, within the limits which shall be prescribed by the supervisor of the harbor.

That act has been construed both as to its validity and scope. It has been the subject of frequent opinions as to its application by the Attorney General of the United States.

Those acts I shall be glad merely to call to the attention of the committee without discussing them, so that you will have them before you.

The CHAIRMAN. I suppose they are all in the Annotated Decisions?

Mr. EMERY. Yes, sir.

The act of 1888 was sustained in validity in Randall *v.* U. S., 107 Fed., 935; 47 C. C. A., 80; U. S. *v.* Various Tugs, 225 Fed., 505.

The scope of the statute and the powers of the supervisor named therein were considered in U. S. *v. The Sadie*, 41 Fed., 396., and U. S. *v.* Romard, 89 Fed., 156.

Then the application of the penalties under the act were construed in Ansbro *v.* United States (159 U. S., 695), The Bombay (46 Fed., 665), The Anjer Head (46 Fed., 664), and United States *v.* Various Tugs (225 Fed., 505).

The most recent case—one which goes directly to the subjects which have been under your immediate consideration here—is that of the United States *v.*

The "Santa Teola," being a decision by United States District Judge Hand in the District Court for the Southern District of New York, decided November 25, 1921, or last month.

The ship was accused of discharging petroleum in New York Harbor, and the question involved was whether or not oil discharged or petroleum discharged was included within the statute, and the court held that it was, and found the indicted party guilty. So far as the statute is concerned it has been held that the act applies to the harbor of New York and includes in its prohibition the discharge of oil or petroleum in any form from a vessel in the harbor of New York within the limits prescribed by the supervisor.

As to the second act, which has been the subject of amendment—of the four or five bills submitted for your consideration—one of them, the Rosenbloom bill, is confined to the discharge of acids. The other four all add to the existing language of the statute either the language as proposed by Mr. Briggs, which was an important amendment referred to in the Sixty-sixth Congress, reading:

"Any oil, fuel oil, oil sludge, or any other oil refuse." That was proposed in the last Congress, I believe, and was reported out of this committee. That is the substance of Mr. Brigg's bill. Mr. Edmonds precedes the phrase "refuse matter" with the words "oil in any form." Let me read the language of the present act to you first. That is a very broad phrase. Section 13 makes it unlawful—

"To throw, discharge, or deposit, or cause, suffer, or procure to be thrown, discharged, or deposited, either from out of any ship, barge, or other floating craft of any kind, or from the shore, wharf, manufacturing establishment, or mill of any kind, any refuse matter of any kind or description whatever other than that flowing from streets and sewers and passing therefrom in a liquid state, into any navigable water of the United States, or into any tributary of any navigable water from which the same shall float or be washed into such navigable water; and it shall not be lawful to deposit, or cause, suffer, or procure to be deposited material of any kind in any place on the bank of any navigable water, or the bank of any tributary of any navigable water, where the same shall be liable to be washed into such navigable water, either by ordinary or high tides or by storms or floods, or otherwise, whereby navigation shall or may be impeded or obstructed."

The second provision in that act authorizes the Secretary of War to fix the limits within which otherwise prohibited refuse matter may be discharged. That discretionary power, of course, is absolutely essential in the operation of the law, since it is evident that somewhere the deposits which are considered objectionable must find a place of deposit.

Mr. LAYTON. You are speaking of the act applying to New York City?

Mr. EMERY. No, sir; I am discussing section 13 of the general statute, which is the subject of amendment in all of the bills presented to this committee. That power vested in the Secretary of War must exist somewhere, since these objectionable deposits must find a final resting place if the streams are to be protected against their pollution and against the menace which they hold to navigation in any form.

The CHAIRMAN. I do not see that. That assumes that the only place you can deposit this polluted matter is in a stream, but that does not follow.

Mr. EMERY. As to some forms of it that is true. It appears to be recognized as a practical fact that some forms of it must find their way into streams.

The CHAIRMAN. I do not think you should assume that as a matter of course. I do not say that it may not be true.

Mr. EMERY. I am only assuming it because the whole course of the law in relation to this subject has assumed that condition.

Mr. LAYTON. Your argument is that if it does not go into a stream, you must have an acreage on which to deposit the solid substances?

Mr. EMERY. It may be consumed in some other form, or separated or rendered innocuous, but a part of it must find its final resting place in streams.

Mr. LAYTON. Your idea is that if the matter is discharged several miles in the interior, the seepage of the solution of those various things would be such that they would eventually find their way into the waters.

Mr. EMERY. When you start out with that broad phrase, "any navigable waters of the United States, or into any tributary of any navigable waters," you are applying it to all streams, and you are applying it to their contamination quantitatively and qualitatively.

Mr. LAYTON. In other words, if you deposit any solid like phosphate on bottom land, it will eventually be dissolved and will find its way through seepage into some navigable stream?

Mr. EMERY. Yes. I heard two experts here ,one a distinguished general and the other Mr. Travers, discuss that question, and they stated that if you opened a coal mine the underground flow of water would deposit the polluting materials carried with it somewhere, and it was stated that that water would ultimately contaminate something if it had an acid content. Where it goes we do not know. That would not seem to indicate that if you desired to protect one place from contamination it would not flow somewhere else.

Mr. LAYTON. The argument was made that it would purify itself in the process of traveling somewhere.

Mr. EMERY. That is an assumption.

Mr. CLOUSE. Reference was made to a case recently decided by the District Court of the Southern District of New York. Was that under the act of 1888 or the act of 1899?

Mr. EMERY. That was under the act of 1888.

Mr. CLOUSE. That applies to New York harbor only?

Mr. EMERY. Yes, sir; to New York harbor only. I want to call your attention to the fact that so far as New York harbor is concerned the law already covers the matter of the pollution by oil.

Mr. CLOUSE. Referring to the act of 1899, is it your opinion that a conviction could have been sustained under that act?

Mr. EMERY. I can not imagine any language that could be used, except by the specific enumeration of particular things, that would be broader than the language contained in the prohibitions of that act.

Mr. CLOUSE. Is it not true that the act of 1899 predicates the offense upon the proposition that it is an impediment or obstruction to navigation; and would oil on the surface of the sea be regarded as such an impediment or obstruction?

Mr. EMERY. I do not think we could say that in view of the fact that it uses the language I have read, that makes direct contact with the form of the polluted discharge. Then it says, "any refuse matter of any kind or description whatever." It refers to any refuse of any kind, character, or description, except liquid sewage, so that the contrast is placed again with liquid sewage, which would indicate that that is the only form of pollutable material that is permitted. The sense in which the word "refuse" is used here, as well as by lexicographers everywhere, means waste material, and waste material must be the residue that is left after the useful part of the things has been extracted or consumed. Of course, that must be regarded from various viewpoints, and the matter would be waste according to the objective of the observer, just as some scientist says that dirt is merely matter out of place.

Now, as I have said, all the amendments that are proposed direct themselves specifically to the prohibition of oil pollution under the act of 1899, except the amendment offered by Mr. Rosenbloom, of West Virginia, which is an exceptionally widely applicable penal bill, since it penalizes discharge into navigable waters or any tributaries thereof of acid waste in any form. It is true that it provides that the limits would be fixed by the Secretary of War, but it is to be presumed that the limits will be as wide as the threatened pollution. In one section of the law the good offices of the Secretary of War are offered to assist and advise any polluter as to the disposition of the polluting matter or its reduction below the point of danger.

There must be, as you gentlemen will see, a practical aspect of this legislation to be considered. I would not have the committee to think for a moment that you have any keener interest in the elimination of polluting waste than the manufacturer has. I would not have it thought for a moment that the manufacturers feel any less interest in that than you. I do not know whether Mr. Rosenbloom intended in his bill to make this distinction or not, and I would like to ask him whether he includes in the term "corporation" as used in his bill municipal corporations as well as private corporations, or would it be your intention to prohibit the discharge of any form of acid waste by a municipal corporation as well as by a private corporation?

Mr. ROSENBLOOM. Under the regulations as set forth——

Mr. EMERY (interposing). Under the law?

Mr. ROSENBLOOM. The health and well-being of the people of this country are the matters of first importance.

Mr. LAYTON. That would make it a part of the Public Health Service.

Mr. ROSENBLOOM. Yes.

Mr. EMERY. In the course of the discussion you had this morning with the experts, the fact was developed that there was both a quantitative as well as a qualitative aspect of pollution to be considered from the point of view of acid waste. You heard Mr. Travers say that in his opinion a very high percentage of coal drainage did not cause any serious results, and you heard Gen. Beach say this morning that in his opinion it did, and you will hear the opinions of other experts. Of course, as Mark Twain said, difference of opinion makes horse races, and I think you should consider the differences of opinion among the experts on the subject more than the matter of legislative procedure. Moreover, I want to call attention to the fact that Mr. Travers has merely used this as an example——

The CHAIRMAN (interposing). But, in reply to some questions, he said that he had not been dealing with coal mines at all. I take it that his opinion as to coal mines was that of a casual observer.

Mr. EMERY. Mr. Chairman, I want the committee to consider the question of whether or not the law, as it now stands, needs amendment in order to protect the public interest against threatened pollution, and in doing that the committee will distinguish in its own mind whether the language of the law is sufficient to cover all the forms of pollution which it regards as dangerous to the public health or the public niterest. I want the committee to consider whether or not the issue presented here is one of enforcement of the existing law. I suggest that, because I assume that you do not intend to merely increase the number of laws on the statute books until you are satisfied that the law as it now stands does not cover what you think ought to be covered.

The CHAIRMAN. I think, however, that that is a question we can very well study in executive session. What we want to get at in these hearings is this: We want to find out, as Secretary Hoover pointed out, the good to be accomplished as against the evil to be reached. We want to weigh those two things, and we do not want to move unless we feel that we are going to move for the public good. That is the object that I think the hearings should be directed to, because the committee can study the statutes and the decis'ons of the courts under the statutes in executive session without taking the time of you gentlemen at all. We want you to inform us on those other questions on which we are not informed. That is what we are seeking information on.

Mr. EMERY. The first matter I wanted to call to your attention is the purpose of this amendment so far as New York Harbor is concerned, and, secondly, whether section 13 of the act of 1899 is sufficient. That provision appears to cover that situation, and I would like to ask the gentleman whether there has been within his knowledge any case in which an indictment has been refused or any case in which this statute has failed where a case of oil pollution has been brought before the courts. I understand that there has been no such case of failure. What I am primarily concerned with is, not so much oil pollution, but with the forms of industrial pollution that have been referred to. The pollution of streams is obviously not caused by industrial discharges alone, and you can not distinguish between industrial pollution, as a matter of fairness under the law, and other forms of pollution. You can not distinguish between the pollution that is caused by a manufacturing establishment and the other that is caused through the discharge of all the sewage of a city.

Mr. LAYTON. In other words, take the situation on the Delaware River, with more than 1,000,000 people living along its banks, and with small streams running into it bringing the sewage and waste from even more people: The refuse and pollution coming from them represents a considerable part of the total pollution, and it is in addition to that discharged by manufacturing establishments.

Mr. EMERY. Yes; and that is also true of the sewage of a great city like New York, with 15,000,000 people around it. It applies to such densely populated centers as Philadelphia, Cleveland, Buffalo, and Detroit, and to every one of our great industrial centers. The discharge from the industrial plants is commingled with the general sewage of the communities in which those manufacturing establishments exist. Now, so far as those manufacturing establishments are concerned, they are all engaged in the study of means to prevent acid discharges or other pollutive discharges from their plants. They are more frequently engaged in those studies than the coal mines are. They are expending great sums of money in these studies and investigations, and they are accomplishing the best returns they can get. I can illustrate that by referring to Mr. Cheney's plant. He is operating one of the largest silk manufacturing

plants in the country, and as soon as Mr. Travers's plan was heard of, Mr. Cheney wired to him and called him in there. He is now experimenting with methods of discharging waste, but so far as the experiments have been carried on, they are not conclusive, because he has treated only one-third of 1 per cent of the total discharge per hour out of that plant. That is to say, he has treated 1,000 gallons per hour of discharge out of a total of 300,000 gallons per hour. Therefore, the effort is practically in the experimental stage. As you well know, you can accomplish a great many things in a laboratory that you can not accomplish on a large scale.

I am informed that the Manufacturers' Association of Ohio, which has gladly entered into the study of this problem, reports that the efforts made there have not been such as to demonstrate their value on a large scale. However, they are very much interested in the experiments. The manufacturers want the assistance of the scientific branches of the Government in overcoming the difficulties with which they are faced. The manufacturer does not want to pollute the streams; he does not want to discharge acid waste into them, and in those forms of manufacture which are productive of acid waste, the difference between loss and gain in their operations may be the difference between what is discharged in the form of acid into the streams and what they retain for commercial uses; so that there is sufficient economic pressure upon them to do what you are here endeavoring to compel them to do.

Mr. LAYTON. What would you suggest as the solution of this question? I am asking you that question as a representative of industrialism. Would you suggest that the solution of this question could be very well left for a while to the sincere efforts of the industrial forces of the country?

Mr. EMERY. Plus the assistance of the scientific branches of the Government that have the facilities to undertake that study—that is, permit them to cooperate with us and give us the benefit of their inquiries. In other words, I do not think, as a practical matter, this great committee or the House should prepare to place a new burden upon the industries of the United States at this time when you yourselves are in doubt as to whether or not the proposals that are presented to you are practical in their nature. It is a very easy matter to excite attention to this thing. We fully appreciate its gravity. As I say, it is an easy matter to excite attention to this thing, but it is a very different thing to propose a plan by which you would undertake to impose severe penalties upon the industries of the country in this connection. These are severe penalties, because Mr. Rosenbloom proposes in his bill that when any manufacturer permits any form of acid waste to go into the tributary of any navigable waters of the United States he is to be fined not less than $500 nor more than $2,500, or imprisoned for 30 days, or one year, and he further provides that each separate discharge shall constitute a separate offense. Under that law the manufacturer could accumulate in the course of a day a series of penalties equal to the capital stock of his concern.

The CHAIRMAN. I think we are impressed very much with the seriousness of the legislation, and we are impressed with the fact that everyone is trying to arrive at a solution of the problem. What we would like to have are practical suggestions as to what should be done.

Mr. EMERY. Our suggestion is exactly the one made by the Secretary of Commerce to you this morning, and that is that this matter be made the subject of an inquiry, so far as the discharge of acid waste and industrial discharges are concerned. In other words, I refer to those forms of discharge as distinguished especially from oil discharges, because we can not speak for that kind of discharge at all. We are not familiar with them. As to those industrial discharges that are sources of pollution, however, we would like to join with the Department of Commerce in that study. We would like to have the benefit of their suggestions, in order that the men who are spending money to-day very freely in these studies and investigations can improve their practical methods. They will gladly place at the disposal of any branch of the Government the benefit of any experiments that they have been engaged in. I am sure that all the States in the Union, or all the State commissions, that have been engaged in this study will place the same data at their disposal.

How can the committee distinguish between the forms of pollution which are purely industrial and those in which the industrial discharges are simply a contributing factor?

If you ignore the municipal contribution to this pollution, it would be equivalent to saying that a private individual was forbidden to administer poison in small quantities, while a public official or corporation could administer it in

large quantities, especially where it affected fisheries and oyster beds which are operated near the points of discharge of these great sewers, because these streams that are draining great centers can well be regarded as nothing more than vast sewers leading to the sea.

The CHAIRMAN. Do the manufacturers regard the efforts that were testified to by Mr. Travers in Ohio as having been in the nature of a marked advance over what it has been possible to do in the matter previous to this time?

Mr. EMERY. I would like to have Mr. Cheney tell you that. Mr. Travers is now engaged in his plant, and I would like to have him answer as to that.

Mr. CHENEY. I might say, Mr. Chairman, in answer to your question, that we have been engaged in the effort to solve this problem of the pollution of streams caused by waste from our factory flowing down into the stream on which our factory is located for 25 or 30 years. Unfortunately, we are located on a small stream, and we consume in the factory and in the town practically all the water that flows in the stream. Consequently, as long as we turn into the stream the acid waste of the factory the stream practically becomes an open sewer. The problem, therefore, is a serious one for us. We started with our study many years ago. We first extended the sewer down to a larger stream into which our particular stream empties, or of which it is a tributary. We found that the people below objected to that. Then we proceeded to try to purify the water before it went into the river. We adopted the methods that were thought best at that time and spent large sums in providing filtration beds, which, after operation, proved to be unsuccessful. We have been at it ever since, and we have employed numerous experts to give us advice on the subject. We have been ready at all times to do something more as soon as we were shown that it was practical, but up to the present time we have not found any practical solution of the difficulty.

Anything that was proposed was too expensive of construction or too expensive of operation to make it seem feasible. During last year we heard of Mr. Travers's experiments, and we became interested in them. We sent our chemist out to investigate his plant. He came back and made a very interesting report. From that we felt justified in asking Mr. Travers to come and look our particular problem over and see if he had a solution for it. He came and showed us some experiments he had made, and we asked him to establish a small experimental plant to see what he could do. That plant is now in operation, and while the results are extremely interesting we have not had the experiment going long enough to obtain all of the scientific facts desired in connection with its operation so as to be able to form a definite opinion as to whether or not it is successful. As has been stated, we have been treating about 1,000 gallons discharge per hour, which is just about one-third of 1 per cent of the total. Consequently it can only be regarded as an experimental plant. We will know more about the question of whether it will be successful later on.

I wish to say to the committee that the manufacturers are willing and anxious to cooperate in these matters, but they feel that they should not be called upon to carry the whole burden of this thing. This is a condition which has been brought about by the passive agreement or the concurrence of the Government of this country. We all recognize that the common law of the country, and, perhaps of the world, would prohibit anyone from discharging deleterious matter into streams to the detriment of those below on the streams. Possibly under the common law this could be prevented, but the thing has become a custom and it has been allowed to go on until it has reached a condition where it is a very serious thing to pass a drastic law that would prohibit it. Consequently, we feel that the Government has its share of the work to perform in assisting the manufacturers toward a solution of this problem. I know that the manufacturers in Connecticut and everywhere else will gladly cooperate and will do what they can with the help of the Government officials to work the problem out. It will take a long time to thoroughly solve the problem, and perhaps, in some places it can not be solved at all. The only thing to do is to adopt some constructive legislation which will, as Secretary Hoover says, enable us to find a solution for the problem and to apply the remedy that is found to be practicable.

Mr. EMERY. Am I correct in stating that in your manufacturing plant you have expended something over $200,000 in these studies and investigations?

Mr. CHENEY. We have been working at this thing for 30 years, and have spent close on to $300,000 up to this time in various ways in our effort to solve the problem. A large part of that was due to the extension of a very extensive sewerage system on to the river below us and the installation of those filtration

beds, which were quite expensive. We have followed that up with other experiments since that time.

Mr. EMERY. You have heard the testimony of Mr. Travers here with respect to the cost of the materials used: Can you tell us what that material cost you? I believe you transported some of it from Ohio.

Mr. CHENEY. When Mr. Travers came to our place, he told us what materials were used by him in the precipitation of this matter, and the principal ingredient in it was marl, which he sometimes called clay. It is really marl. As we have no beds of that material in our immediate vicinity, we had some brought on from Oho. Of course, it is hardly fair to take the cost of that material at that time as a criterion of what is would cost if it were used regularly. I think we have some data showing that it cost something like $14 or $15 per ton.

The CHAIRMAN. Your company bought it in what quantities?

Mr. CHENEY. We had a carload of it shipped for experimental purposes. We have found a source of material, which apparently does the work well, very near home, and no doubt we can obtain material to do that work at a lower cost. However, as I have said, that matter is in the experimental stage, and we are not prepared to make any statement yet as to the outcome.

Mr. RADCLIFFE. Have you any objection to stating what the cost of that marl would be at your own home plant?

Mr. CHENEY. So far as we can see, it is only a question of the cost of hauling it a very few miles and drying it. It must be dried, and I suppose the cost would be $2 or $3 per ton.

The CHAIRMAN. Do you haul it by truck?

Mr. CHENEY. Yes, sir; it is a short distance.

The CHAIRMAN. Five or six miles?

Mr. CHENEY. A mile or two, perhaps.

Mr. RADCLIFFE. Would you be willing to say that the cost would be $5 per ton?

Mr. CHENEY. I do not think it would cost over that.

The CHAIRMAN. As I understand it, it would not be that much.

Mr. CHENEY. It must be dried and prepared. It might cost $4 or $5 per ton.

Mr. EMERY. There is one other feature I would like to call attention to. Of course, Mr. Rosenbloom has not quite reached the point where he would ask for the adoption of a rule by which the administrative officers who would become the enforcers of the law might insist upon their definition of a crime.

The CHAIRMAN. To decide when it was a crime?

Mr. EMERY. Yes. The standard for the definition of crime must be laid down by the legislative body. All that can be left to the administrative body is to determine certain facts, and when those facts are determined then the standard which has been established by the legislative body should be applied to those facts. To vest in an administrative body the discretionary power to determine when and what crimes were being committed would be like the Manchu system of law described by Justice Brewer, under which it was provided that certain offenses which were described as dishonorable should be punished with 40 lashes, and that certain other offenses that were highly dishonorable should be punished with 80 lashes. It would be left to the administrative power to determine what was dishonorable and what was highly dishonorable.

What the manufacturer wants is an opportunity to assist in a constructive solution of this very difficult question, and he wants to assist you in a practical way. He would like to have the best advice and assistance that the Government can give him after its own experiments have been made. They want assistance from every source of scientific inquiry that is at the disposal of the Government. Otherwise, if we are presented with these admendments that are before you, without any assurance that they will solve the problem at all, it would simply mean the imposition of an additional tax upon the industries from which they would get no return. You may remember the story of the Irishman, who went into a restaurant that was infested with flies. The walls of the restaurant were speckled with flies, and the food was covered by the insects. He said to the restaurant keeper: "If you will give me a meal, I will clean out all of your flies." The restaurant keeper being anxious to get rid of the flies, said: "Certainly, I will give you a meal if you will get rid of everyone of these flies, but I want you to promise me faithfully that you will destroy them all." The Irishman gave him his promise, and the restaurant keeper gave him what he wanted to eat. After concluding the meal, the Irishman started toward the door, whereupon the proprietor of the restaurant said: "Stop, you promised me that you would destroy all of these flies." The Irish-

man said: "All right, I will wait on the outside, and if you will drive the flies out to me, one by one, I will kill all of them." That is the difficulty with fly-killing theories that are not subjected to a practical test or demonstration as to their efficacy. It is like the Italian scientist, who recently promulgated a theory after he had made an intensive study of the effects produced by the motion of violin strings on a metal disk. When he drew the violin strings over the metal disk he found that they produced a number of different vibrations, which he worked out in a certain mathematical form, and from this he deduced the conclusion that all the flowers of the earth were merely the concrete expression of the music of the spheres as they roll through the universe.

Mr. LAYTON. I deduce from your later remarks that if such a bill as this were enacted it would place the burden for the accomplishment of certain things upon the manufacturers, for which there is now no remedy?

Mr. EMERY. No known practical remedy that is universally or generally recognized and can be applied. There are differences of opinion among gentlemen as to what will produce the result. For instance, take the testimony of Gen. Beach this morning; he is a high authority in his own field, but there is no distinction made in his discussion or that of the expert presented by Mr. Rosenbloom between the quantitative and qualitative tests with reference to acid in water. How much acid is dangerous and who knows what kinds of acids? Mr. Rosenbloom says that the presence of acid waste in any form is enough to incur these penalties.

Mr. ROSENBLOOM. Your anecdotes have been very interesting and amusing, but on page 2 of this bill you will find these words:

"Within limits to be prescribed by the Secretary of War."

Mr. EMERY. Do you mean physical limits?

Mr. ROSENBLOOM. Well, interpret that as you please.

Mr. EMERY. I can not interpret it as I please.

Mr. ROSENBLOOM. I am not a court of appeal.

Mr. EMERY. But you are a legislator, and if you are a legislator I must know in advance what it is you are going to charge me with misconduct for doing.

Mr. ROSENBLOOM. I think it is very plain, and I think the committee will understand what is meant by that term. "Within limits to be prescribed by the Secretary of War."

Mr. EMERY. May I ask the chairman of the committee whether he would understand that to mean within physical limits prescribed by the Secretary of War in which the deposit could be made or would the Secretary of War prescribe what kind of acid or what amount of acid could be discharged—which of the two?

Mr. ROSENBLOOM. That would be a general construction, but, of course, as attorney for those who might be put to some additional expense it would be natural to argue in a confusing manner. I can appreciate that.

Mr. EMERY. I would resent a suggestion from any source that we are not as much interested in preventing pollution as any Member of Congress can be, and that we would not assist and cooperate in doing so.

The CHAIRMAN. Let me see whether I can summarize your position. As I understand it, you, in behalf of the manufacturers whom you represent, take this position: That certain waste from factories must, on account of its liquid nature, be discharged into the streams upon which the factories are located; that up to the present time there has been discovered no way of purifying that waste which would not add so largely to the cost of production as to make the use of it prohibitive; that manufacturers generally have been studying the question, but in spite of their studies they have not reached a solution; that the work which has been done in Ohio has been done so far in a small way and in an experimental way and has not reached a volume where it could be called a real test of its usefulness. In a general way, that is about the position you take, is it not?

Mr. LAYTON. And further with this idea, that the manufacturers do want and are willing to assist the Government, either in one department or another, in a real effort to find a solution of this question.

Mr. EMERY. Yes, sir. And let me leave this final suggestion, that when we speak of the manufacturers we must not permit our minds to dwell on a picture of very large corporations with large means capable of making all sorts of private experiments in connection with this thing, like, for instance, Mr. Cheney's corporation, which has expended a large sum of money because it is in a position to do so. The last census of manufacturers shows that in the United States there are now about 289,000 manufacturing establishments, pre

ducing about $62,500,000,000 a year in manufactured commodities; that the average number of employees per manufacturing establishment is a little over 30, and that less than one-half of 1 per cent of these establishments employ 1,000 people or more, and that the great value added to manufactures is added in establishments that have in the neighborhood of 250 or 300 employees.

Mr. LAYTON. Will you answer me another question for the purposes of the record?

Mr. EMERY. Yes.

Mr. LAYTON. How many acids are there of a deleterious or poisonous character that are used in the industrialism of the country?

Mr. EMERY. I would not undertake to answer that.

Mr. LAYTON. Are there so very many of them?

Mr. EMERY. There are such infinite forms of production that I would not undertake to describe what forms of acid discharge take place or what percentage, either qualitatively or quantitatively.

Mr. LAYTON. Would not a half dozen different acids cover the field of industrialism?

Mr. EMERY. I should think so. I should think that the chemical industry would possibly be the best individual witness as to that.

Mr. LAYTON. But the one prevalent acid is sulphuric acid.

Mr. EMERY. That is the most common one, and that situation is the one to which we direct your attention, plus the idea that wherever administrative authority is reposed—and whether it is to be reposed in the Department of Commerce or in the War Department is, of course, a very important question—the desire of the manufacturer is to cooperate in a constructive solution of this question, and he will place all of his data at your disposal or at the disposal of anybody that you may make. But with regard to the discharge of acid we contend that the present state of knowledge is not such that the Congress ought to commit itself to a measure which carries high penalties without the assurance that what it proposes to do or what it proposes to have done will accomplish the object which it has in mind without exceptional expense in producing the result to be desired.

Mr. ROSENBLOOM. The exceptional expense, then, is the large impediment in the way of compliance with this law?

Mr. EMERY. No; it is not alone expense, but if I can make it clear, it is expense that does not produce the result. Mr. Rosenbloom's argument simply seems to be that one gentleman whom he has produced here has solved the problem, but we have a great many gentlemen working on the problem—and on many phases of it—who say that no universal remedy has been proposed or any general remedy that will absolutely assure the condition he seeks to find, but it is rapidly going forward.

Mr. RADCLIFFE. How many manufacturers, of all those you represent, do you suppose are as broad-minded as the Cheney Manufacturing Co. in endeavoring to solve this problem?

Mr. EMERY. I will illustrate that in this way: That during the past year, and long before these measures were introduced, the State associations of manufacturers, 36 in number, have been investigating this question and undertaking to find for the benefit of their members the best methods that have been found and have been distributing that information as widely as they can. They have been engaged in that effort, and thus supplementing the efforts of large manufacturers, for the benefit of the small manufacturer who does not possess the means with which to carry on experiments for himself.

Mr. RADCLIFFE. Is it not true that very few people are doing the practical work that Mr. Cheney is doing? Outside of talking and letting their experts work, is it not a fact that there are very few that are endeavoring to solve it in a practical way?

Mr. EMERY. I would rather have the gentlemen from Connecticut, who have had wide experience in New England, answer that question. I think they will tell you that they know of great numbers of manufacturers who are doing work of this kind. Is not that true, Mr. Cheney?

Mr. CHENEY. I know of a great number that have done this work, not only in Connecticut but in Massachusetts. There are a great many manufacturing establishments in Massachusetts that have been through the same experience we have been through; in fact, when we started to make our experiments we went to Massachusetts and we got the expert that had been working on the problem there. I think that manufacturers generally all over the country have taken hold of this thing; many of them have not, of course, because in some

places they have not felt the need of it as much as those located on streams where the pollution is rather high; in other words, where the amount of waste that is put into streams is less in proportion to the flow of the streams they have not felt the necessity of it as have those located as we are located. We have been up against a very serious problem, as have many other manufacturing establishments, and for our own protection we have had to take the matter up.

Mr. EMERY. Is it not a fact that they not only undertake to do this for the purpose of preventing pollution, but for the purpose, where they are at all commercially valuable, of recovering the by-products?

Mr. CHENEY. They have tried that, too.

Mr. ROSENBLOOM. If it could be done at a profit, of course they would do it.

Mr. BUCK. In answer to that same question, I have been connected with the manufacturers' association for some years, and I have been perfectly astonished at the amount of money concerns have spent privately for the elimination or lessening of pollution and have been astonished at the amount which has been spent by municipalities. This is also true, in answer to the question of the gentleman on the right of the chairman, that if there are concerns in Connecticut making silk on a small scale that are not doing this work, it is because they have left the question of the elimination of pollution from silk waste to Cheney Bros., and they may not be doing it because they can not afford to do it.

They can not do it, because to add a cent to the overhead cost of a silk manufacturer would put him out of business. So I think nearly all cases of waste have been investigated at great expense, and that came out in a report made by a commission of which Mr. Saville, who will speak later, was a member. It would appear, therefore, that they are very much interested and want to cut out all pollution conditions if they can.

Mr. RADCLIFFE. I asked that question because of this fact: I happen to have been a member for five years of the New Jersey Fish and Game Commission, and these same problems came up at every meeting; and I want to say that there are few—so very few that I can count them on the fingers of my two hands—in New Jersey doing the same kind of work that Mr. Cheney has been doing—that is, when a problem was presented and we investigated it we found that not a single thing had been done to assist in solving the problem.

The CHAIRMAN. I believe Mr. Moran desires to be heard this afternoon.

STATEMENT OF MR. EUGENE F. MORAN.

Mr. MORAN. As has been stated, New York has, perhaps, had a greater problem from oil pollution to contend with than any other district along this coast or throughout the United States. During the war and subsequent to the war, when the peak of our shipping was reached and when they converted our coal-burning ships into oil burners, pollution was at its greatest. It got so bad that the supervisor of the harbor called a conference in August last to devise ways and means of lessening pollution in the harbor. The committee met on the 24th of August. The representatives of the industrial plants using oil for fuel, agents and representatives of ships using oil for fuel, and the city, Federal, and State authorities were invited to attend that conference. At the first conference it was decided that the only way to lessen pollution in New York was at its source. The committee made several inspections, and it appealed to all concerned to lessen this evil. We brought forth the fact that we had three great fires in New York due to oil on the water. One was at Bayonne, one was upon the receiving ship *Granite State*, which you, no doubt, remember, and the other was at the Erie Basin, caused by a ship emptying live coals into the oil-covered water, which set fire to the piers, did a great deal of damage, and endangered a great many lives.

After our fourth inspection and after our appeal to the community in general we found that this pollution had lessened, and on our inspection last month we found that pollution, as nearly as we could estimate it, in the New York Harbor had lessened about 75 per cent. In talking with the dock commissioner a short time ago he thought about 50 per cent, but we are firmly convinced that it was lessened at least 75 per cent.

Pollution along our beaches is caused by the depositing on the water of the oil from incoming tank ships and the discharge of bilge water, so called, by the oil-burning ships, and also to some extent by the discharge of water passing through the condensers of the ships. Of course, in the harbor that condensed water does not appear to be much while coming through, but on set-

tling on the water, when it is considered that only one drop of oil will cover a surface of about 30 square feet, it amounts to something.

This oil after it floats for some time settles on the bottom of the harbor in pieces perhaps as big as your fist, and in dredging operations that material is stirred up again, and naturally floats until it becomes impregnated with salt water or heavier refuse.

My idea in coming here was to assure the committee of the cooperation of the committee on oil pollution in New York Harbor in connection with anything that may lead to an international conference to provide means for arresting this at its source. The Navy Department at the present time has a plan and is experimenting on a plan to separate this oil by a centrifugal process. I do not believe their report is out yet, but no doubt if it proves successful, which I have every reason to believe it will be, a conference could be called, and I do not believe there is any better time to call it than at the present time when we have so many representatives of foreign Governments here in Washington. If some plan could be devised which would compel every oil-burning ship and every oil-carrying ship to put in a machine that will take this oil and by a centrifugal process or some other process separate it from the water and discharge the clear water overboard then the problem, as far as our beaches are concerned and as far as New York Harbor is concerned, will be definitely settled. I might mention that after depositing this oil 25 or 30 miles from shore, particularly in the summer time, with the prevailing southerly and southwesterly winds, it will float indefinitely and finally land on our beaches, so that at New York, Long Island, and New Jersey the bathing pavilions as a part of their equipment carry gasoline and turpentine so that bathers can clean themselves after taking their baths.

As far as the fish are concerned, you take our North River shad, that was at one time famous, and you take our bay lobsters. You take a lobster out of Gravesend Bay now and cook it and you will be reminded of the days when you were taking castor oil. It has that oily flavor, and I have had North River shad that have had that oily taste.

I do not want to detain you any longer, but I want to assure you, on behalf of the committee on oil pollution in New York Harbor, that you will have our assistance in anything you can do to remedy this evil, and we will be glad to have you call on us.

The CHAIRMAN. We will next hear Mr. Booth.

STATEMENT OF MR. GEORGE W. BOOTH, OF THE NATIONAL BOARD OF FIRE UNDERWRITERS.

Mr. BOOTH. Mr. Chairman, what I have to say only has reference to the floating oil in the harbor and its effect on the fire hazard and to state some few cases of fires that have resulted from that cause.

The CHAIRMAN. While we do not want to shorten your time at all, we have four or five whom we must hear, and we will have to adjourn very shortly.

Mr. BOOTH. I will not take much of your time. About a year ago the national board concluded that there was a real fire hazard arising from this cause, and it sent one of its engineers to most of the large ports along the Atlantic coast; it also collected data by means of correspondence and found that in 18 ports, from Portland, Me., to Seattle, Wash., there was present in some degree enough oil floating on the water to introduce a fire hazard, and we believe that the only way to handle it is through Federal action. There have been a number of fires, some of them quite destructive, in the last year or two, one of them in Baltimore, and which resulted from oil on the water.

The CHAIRMAN. Gen. Beach cited three illustrations, so that we will not need those.

Mr. BOOTH. That was not one of those, I believe. This was a fire in Baltimore which resulted in the destruction of 2 piers and damaging 12 ships. I have no record of the loss. The one in New Orleans, to which Gen. Beach referred this morning, resulted in a total loss estimated at $700,000. So it is not a small matter, as illustrated by the results of these fires. There have also been 8 or 10 fires in New York Harbor, one of which resulted in the loss of life.

I have no special suggestion to make as to legislation, except that I believe it is fundamental to provide at the points where the ships take on fuel some means of disposing of their waste oil. We believe that the bill, H. R. 7369, introduced by Mr. Appleby, with the amendments which we understand Mr. Lamb has in mind, will take care of the hazard involved in this oil pollution.

The CHAIRMAN. We thank you very much. We will now hear Mr. Baker.

STATEMENT OF MR. HUGH P. BAKER, EXECUTIVE SECRETARY OF THE AMERICAN PAPER AND PULP ASSOCIATION.

Mr. BAKER. I want to say just a word in connection with the statement I would like to file with the clerk of the committee. I represent some 400 paper and pulp manufacturers scattered throughout the United States. The paper industry uses vast quantities of water, perhaps more, in proportion to the total of its manufacturers. than any other one of our basic industries. Some of our paper mills use as high as 20,000,000 gallons of water a day, and we must have pure water. Many of our mills have been located upon the basis of securing a supply of pure water. We are turning back into the streams water which contains alkaline matter, organic matter, and possibly some little acid from the pulp mills. I do not want to put the paper manufacturers on record as opposing in any way the solution of this stream-pollution problem.

Recently I corresponded with the United States Bureau of Fisheries here in Washington, with the department of chemistry at the Columbia University, and with technical men elsewhere, and the result of this correspondence indicates that we do not know the result of these acids on the fish and plant life of the streams. Gen. Beach this morning referred to the effect on fish coming into a stream that appeared to be filled with acid. I have had a good deal of experience in investigating some of our streams and lakes in connection with the killing of fish. We know that there are diseases wiping out fish as well as other animals; we know that stagnant water and water standing in a very hot sun will kill fish. The fact that we do not know definitely that the acid in the stream referred to by Gen. Beach killed those fish is indicative of the fact that we need more knowledge. and we would like to back up the suggestion made by Secretary Hoover that there be a thorough Federal investigation of this question before legislation is passed which will put a burden upon us in the building of purification plants. Knowing a good deal about the way in which the States are handling the investigation of fish and game, I would like to urge that this be a Federal investigation and that the Department of Commerce or the Bureau of Fisheries take this up and let us have the facts before legislation is put upon us that may cause us a great deal of inconvenience and cost us a great deal of money in putting in a purification plant.

Just one other word and then I am through. I think this question of stream pollution is somewhat tied up with the question of forestry. The paper manufacturers have been looking into the question of reforestation and we believe that if the headwaters of our streams would be covered again with forests, and thus preventing an uneven flow of water—that is, keeping the streams running full to their banks through the season—that this question of stream pollution will not be as serious as it has been in the past. Put back the forests on the headwaters of our streams, establish a national forest policy, and this question is going to be much less difficult than it has been in the past.

I appreciate this opportunity of saying just a word, Mr. Chairman.

(The statement submitted by Mr. Baker follows:)

STATEMENT BY THE AMERICAN PAPER & PULP ASSOCIATION, NEW YORK CITY, PRESENTED THROUGH HUGH P. BAKER, EXECUTIVE SECRETARY.

Hon. S. WALLACE DEMPSEY, *Chairman.*

SIR: In behalf of more than 400 paper and pulp mills in the United States, I wish to present a statement in the form of a comment and a protest on certain bills which have been introduced in the House of Representatives during the present session and which, as we understand it, are now before your committee. These bills are:

H. R. 8730, by Representative Bland, stream pollution, introduced October 17, 1921.

H. R. 8783, by Representative Rosenbloom, stream pollution, introduced October 20, 1921.

H. R. 7369, by Representative Appleby, stream pollution, introduced June 24, 1921.

The character of the above-mentioned bills are much the same, all dealing with the question of maintaining navigable streams and their tributaries in this country in such condition that their waters will not be injured in any way for the enjoyment of those waters for commercial, potable, or recreational uses.

The paper manufacturers of the United States are strongly in favor of maintaining sanitary conditions in all navigable streams and their tributaries in this country.

The American Paper and Pulp Association, which is a national federated organization of 18 associations of manufacturers of pulp and paper, represents, through these associations, the paper industry of the United States. In opposing the legislation described in the bills listed above, the association wishes to go on record as favoring strongly the principle of maintaining navigable streams and their tributaries in such a way as to prevent the waters from becoming insanitary or unsightly. The industry will cooperate willingly in the development and in the carrying out of proper legislation for the protection of the water supply of the nation.

No other large industry in the country is so dependent upon a permanent supply of good, clean water as is the paper industry. The supply of water usually determines the location of pulp or paper mills. In the very few large communities where paper and pulp mills are operating the paper manufacturers have been very aggressive in the fight for proper legislation—that rivers and streams might be protected against erosion—and other legislation dealing with sewage disposal, etc.

The paper industry wishes to bring up, in connection with these bills, the question as to whether the legislation called for is of such immediate necessity as to demand the very great expense that will devolve upon industrial plants generally in providing filters and other artificial means of purifying waste water before it is returned to the streams. That is, are the results to be achieved commensurate with the burden that will be put onto the industry at a time when the industry is suffering seriously from depressed business conditions? In some specific cases immediate legislation may be necessary, especially where oil and similar waste are marring bathing beaches or harbors.

The American Paper and Pulp Association wishes to discuss this proposed legislation solely in its relation to the manufacturer of pulp and paper. The paper industry in the United States to-day comprises 818 paper and 322 pulp mills. The value of the product of these mills in 1920 was over $1,000,000,000; the number of employees in 1920 was over 110,000 persons. The capital invested in these paper and pulp mills is well over the billion dollar figure. This great industry requires in its manufacturing process more water than any other basic American industry. Every ton of paper manufactured requires the use of from 80,000 to 200,000 gallons of water. For example, one mill manufacturing 80 tons of paper and 125 tons of pulp uses daily 15,000,000 to 18,000,000 gallons of water.

The effect of the proposed legislation upon the paper industry, assuming that any one of the bills under discussion becomes a law or amends the existing laws, and assuming that such a law would be enforced to the letter, would be to cause many paper and pulp mills in this country to close down immediately. Those pulp and paper mills which could afford the cost of installation of huge settling tanks, or other purification apparatus, would be put to a very great expense on account of the enormous volume of water used. There are many paper mills in the country using over 1,000,000 gallons of water an hour, and it would be almost confiscatory to force the filtering of such vast quantities of water at this time.

The burden which many mills are now carrying as the result of having to bring wood and pulp from long distances, added to high-priced labor and heavy taxation, if increased by heavy expenditures for filter plants, etc., would not only force complete abandonment of many mills in the United States but might also cause a large number of pulp and paper mills to move over into Canada, where some of the mills have already gone in search of permanent supplies of wood.

In case a paper manufacturer remained in this country and operated under the additional handicap resulting from this legislation, he would be forced to compete not only with Canadian operators but also with those in low-waged, currency-debased countries, such as Germany, which are producing paper at costs ridiculously low as compared with those resulting from manufacture under American living standards.

INVESTIGATIONS AS TO THE EFFECT OF WASTE IN STREAMS AND RIVERS NECESSARY BEFORE ANY PERMANENT SOLUTION OF THE PROBLEM IS POSSIBLE.

In opposing the bills under consideration, this association is not entirely destructive in its criticisms. The industry is vitally concerned with a permanent supply of good clean water. The paper industry believes, however, that the

pending legislation would be a serious and destructive handicap. The paper industry stands ready to cooperate in any constructive measure for the solution of the stream pollution problem. It feels that the question is too great a one to be settled hastily or by a single statute, formulated, as we believe, to meet an emergency confronting the bathing beach and harbor situation, and that, without regard to the larger problems involved.

Stream purification as it relates to the paper industry is a technical question. Correspondence with the United States Fish Commission, the department of chemistry at Columbia University, and with technical men elsewhere, reveals the fact that there is not sufficient specific data upon the effects of various forms of waste from industrial plants and municipal sewage on the animal and plant life in our rivers and streams to warrant any drastic or hasty legislation on stream pollution as effecting industry. There is almost no information as to a satisfactory means of preventing pollution, where such pollution is sufficient to warrant attention. The appearance of waste water from paper mills is sometimes unpleasant, due to the diffused material which seems to be without deleterious effect either upon animal or plant life. The waste from paper and pulp mills, which seems to have an injurious effect upon fish, is usually alkaline in character, and hence less injurious than the acid waste from other manufacturing plants, even though it is carried for some distance by the streams.

We contend that the proposed legislation would work a serious handicap upon an absolutely basic industry in this country. If great expenditures for the purification of its waste water are to be required, especially if the paper industry does not have ample time to adjust itself over a period of years to the essential changes in equipment, a blow will be given the industry from which it will not recover in years.

Paper and pulp mills are usually located far from centers of population. Some of the largest paper and pulp mills in the country are in relatively inaccessible forest regions. In many cases these mills have gone into the forest and developed their own communities. If the pending legislation should be passed, requiring immediate installation of purification apparatus, such apparatus would have to be put in where there is at present absolutely no need for it, nor would this need develop for years to come.

Because of the fact that its very permanency is threatened by the rapid depletion of our forests, the paper industry has been making a thorough study of the forestry situation in the United States. This investigation has not only shown the extent of forest depletion in this country, but what is being accomplished both here and abroad through adequate forest policies. If Congress at this time, instead of passing legislation which would force industries, operating with a scarcity of water, to dispose of all waste turned into streams, would put upon the statute books an effectve national forestry policy which would assist the States in renewing their forests, there would be little need of legislation in the form now being considered. New forests on hill and mountain lands now denuded would keep our rivers flowing full to their banks, through all of the seasons, and there would be but little question of injury to streams and rivers from the waste turned into them from pulp and paper mills.

NOTE.—Mr. Baker also submitted with the above statement an article entitled "Water Used in Papermaking—Estimates of Consumption in Various Operations, Including Pulp Manufacture," by Arthur S. M. Klein, Ph. D., C. E., printed in the issue of November 16, 1921, of Paper, page 12, and an editorial on "Stream pollution" on page 24 of the same issue.

Mr. BUCK. I would like to have you hear Mr. Caleb M. Saville. Mr. Saville has been connected with the United States Government in an expert capacity and with hydraulic questions on the Panama Canal Zone.

STATEMENT OF MR. CALEB M. SAVILLE, OF HARTFORD, CONN.

Mr. SAVILLE. There seem to be many practical questions in connection with this matter, but I do not need to take up the time of the committee in speaking of them. Among other things I happen to be the chairman of the State pollution commission—a commission recently reorganized, let me say—in Connecticut, and I would like to back up the suggestion made by Secretary Hoover and to supplement that of Mr. Emery in regard to this being a Federal matter. Mr. Emery spoke of cooperation between the manufacturers of the States and the scientific men of the Federal Government. Besides cooperating with the scientific men there is an interstate matter here that it is almost impossible for the States themselves to handle. For instance, there is a river on the

boundary line between Connecticut and Rhode Island, the Pawcatuck River, a small stream, if you please, but there are manufacturing plants on it and there are oyster beds on the shores of Long Island Sound. Connecticut may come in and absolutely purify its waters, absolutely get them pure enough for anybody to drink, but Rhode Island may do nothing. As I say, Connecticut may get its streams perfectly pure, but Rhode Island may put in enough polluted matter so as to make them almost a sewer and Connecticut can do nothing.

Then we have the Connecticut River running into the State of Connecticut, and above the Connecticut State line there is, perhaps, a half million of population and there are industrial establishments at Holyoke, Springfield, Turners Falls, and so on, and Connecticut may do all it can to its part of the stream but——

The CHAIRMAN (interposing). We understand that you feel this is an important question, and that being so, tell us what you think ought to be done.

Mr. SAVILLE. I think we ought to have an investigation such as Secretary Hoover has suggested. That would be my reply in a nutshell.

The CHAIRMAN. Can you give us any light on how far experiments have gone with reference to purifying streams or purifying these deposits before they have gone into streams?

Mr. SAVILLE. In Connecticut a vast amount of this kind of work has been done in the last few years.

The CHAIRMAN. Have you reached any solution?

Mr. SAVILLE. No, sir. Also the commission, of which I am a member, had reached a point where it thought it might suggest something, and, I will say that in England, as I understand it, this question has been under consideration for the last 50 or 60 years, and they have only arrived at some tentative solution. I understand that there are some 650 patents on the books of the English patent office on processes for doing this, but the general solution that they have come to is that some streams will have to be sewers while other streams might be partially cleaned up, and other streams might be purified. That is a matter for experimentation and for getting together—something that the Federal Government can take hold of. More than that if two manufacturing plants, discharging exactly the same kind of sewerage or waste in the same quantity, one of them may be located upon the upper reaches of the stream, above the State line, and its discharge may be absolutely harmful to the people below; while the discharge of this other establishment, near the mouth of the stream, in a larger watershed, may be of little harm. Therefore, it seems as if this matter was one that has got to be taken up and studied quite considerably before a definite solution can be arrived at.

STATEMENT OF MR. GEORGE T. KIMBALL, OF NEW BRITAIN, CONN.

Mr. KIMBALL. The manufacturers of New Britain, Conn., have already expended about $75,000 trying to find some real remedy or way of disposing of the acid wastes from chemical manufacturers. The city of New Britain has added $100,000 to that, and has spent about $500,000 more in an unsuccessful attempt to get rid of it. I am simply stating that to show that we are trying to do the best we can, and I do not believe there is any ready-made, quickmethod of disposing of it simply by the expenditure of any sums of money.

STATEMENT OF MR. SWEPSON EARLE, ENGINEER, CONSERVATION COMMISSION OF MARYLAND.

Mr. EARLE. I attended the last meeting of the conference, and at that meeting oil was the main subject. In fact, we had representatives from the Atlantic coast as well as the Gulf, and every means of oil pollution was brought out. The main subject there seemed to be elimination of oil and how it could be done. So I went back with the idea of studying the project to help out that cause. So far as waste is concerned, actual waste, I would like to see every manufacturing waste, chemical waste, sewerage, and other things that contaminate waters, eliminated. But it is not a practical solution to say that you can eliminate all waste at one time. Therefore, as we have had it—I am speaking of Chesapeake Bay—as we have had a large number of wastes that have been destroying our fishes, and the waste coming from oil seems to be greater than any, all our natural resources, fishes, oysters, crabs, and wild fowl, I find, are being destroyed by oil and will be destroyed by this one cause. Therefore, I

wish to offer a project to help solve the oil pollution. This project is on the line of least expense to oil ships coming in and going out from the harbor, and at the same time it will solve the problem.

I will just explain this and leave this chart [1] with you. The idea is that you have a channel. This is applicable to Baltimore and to the harbor of New York and other harbors, the Delaware River and harbor at Philadelphia, where you have coming in your main channel. Take one of these sections, for instance [indicating chart], 300 feet wide, 1,000 feet long. That is room enough for a ship coming in, 300 or more feet in length. You put down four sections of piles, center two sections closed. There will be a platform on that and the ships will come in against those piles and be made fast. That is, if the ship desires to get rid of the oil coming into port. After she comes in a large flexible hose will be attached as she pumps her bilges overboard. That will then go down to a submerged pipe, which, in the case of Baltimore, will go on to the shore and then into the vats. Those vats can be made into raised vats. A big area is offered in Baltimore, and Baltimore would be very glad to have it. After the ship has disposed of her oil, which would take several hours, that ship goes on her course up to the port. That oil is shut off at once after she finishes pumping, and the next ship comes up.

The oil and sludge can be used as by-products, because several manufacturers say they can use it. We can skim that off the top and the sludge and oil can be handled as by-products. This project has met the approval of a number of oil ships, and would meet the conditions. It would eliminate waste in your harbors and out at sea, where the oil is taken in to your bathing beaches. I offer the project, which will be supplemented with blue prints in detail, which I believe will meet the condition.

Mr. CHALMERS. Where do you place the overhead, the charge of operating?

Mr. EARLE. The pumping part of it will have to be done by the ships. They have to pump bilges anyway.

The CHAIRMAN. What you pump out will be of value and it will take care of itself.

Mr. EARLE. They have offered to take that for the value of the sludge, the separators.

Mr. CHALMERS. The harbor board or some local organization will take care of the construction?

Mr. EARLE. Yes, sir; they will be operated by the harbor board, where the ship goes back and forth to port. Just before we leave, Mr. Robinson, of Maryland, will make a short statement.

STATEMENT OF MR. W. C. ROBINSON, OF BALTIMORE, MD.

Mr. ROBINSON. Mr. Chairman and members of the committee, I am here in the interests of the Chesapeake Bay resources. By resources I mean fish, crabs, oysters, and game birds. I am also interested in the petroleum industry. Now, as Mr. Earle has explained, and, as the Bureau of Fisheries will tell you, this oil is very destructive to the Chesapeake Bay resources. It is killing the fish. It is killing the game birds. We are finding ducks and fishes coated with the oil, ducks unable to dive and unable to fly, and they are found on the water starving to death. In the case of crabs the beaches are coated with oil and the crabs are not able to come and slough. Altogether it is a very serious menace to the Chesapeake Bay resources.

If this plan that Mr. Earle has suggested is a practical one, and I believe it is, it would do away not only with the trouble we have in Chesapeake Bay, but all the other ports, and we hope that some remedy will be ultimately found that will do away with the bilge waters pumped overboard in our bay.

The CHAIRMAN. Thank you very much.

STATEMENT OF MR. JOHN W. RUTH, JERSEY CITY CHAMBER OF COMMERCE.

Mr. RUTH. I have a resolution, Mr. Chairman, which I will not take the time to read but will present it on the table.

The CHAIRMAN. Yes.

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[1] Not printed.

(The resolution referred to is as follows:)

RESOLUTION PASSED BY THE BOARD OF DIRECTORS OF THE JERSEY CITY CHAMBER OF COMMERCE OCTOBER 31, 1921.

Whereas the city of Jersey City is situated practically in the center of the port of New York and has some 11 miles of waterfront on New York Bay and Newark Bay, and

Whereas a large share of this waterfront is developed for industrial purposes, and includes many miles of warehouses, piers, and bulkheads at which hundreds of lighters are constantly tied up, and

Whereas owing to the greatly increased use of oil-burning ships and the practice of discharging fuel oil into the waters of the harbor much of this waterfront property in Jersey City has become oil soaked and presents a constant fire menace to the community, and

Whereas in addition to the oil refuse discharged by oil- burning and oil-carrying steamers there is also a considerable quantity of waste oil being pumped into the bay from some of the oil-burning plants located along the waterfront, particularly the gas houses of the Lehigh Valley and Central Railroad, and

Whereas the present bill before your committee takes care, to a great extent, of the shore resorts along the New Jersey seacoast, and will be of undoubted value to the harbor as a whole, although it does not provide quite as much protection as the owners of valuable waterfront property would like to see incorporated in a measure to be favorably reported by your committee; therefore be it

Resolved, That the Jersey City Chamber of Commerce heartily indorses H. R. 7369 and trusts that it will receive your favorable consideration, and that in considering this measure you will also give some thought to the problem of pollution from industrial plants and ships lying at anchor in the harbor, which is becoming a source of serious danger to not only the owners of waterfront property but to the adjacent communities as well, inasmuch as a serious fire starting along the waterfront might very easily spread to the business districts of both New York and New Jersey; in fact one very serious fire has already taken place along the waterfront in our sister city of Hoboken, and present conditions make a repetition of that conflagration a daily possibility in New York City and all of the communities along the New Jersey side of the Hudson River.

Mr. RUTH. I want to say in connection with what Mr. Moran said a few moments ago that fortunately or unfortunately I am president of the New York Boat Owners' Association, comprising 300 members or firms which are members, and about 3,000 boats. We found this oil pollution a great menace, and we have been cooperating with that committee and through other civic bodies that we could to help manufacture a sentiment on those lines. In some cases we have been very successful in catching the guilty parties and by moral suasion only induced them to reduce the amount of pollution as much as possible. In traveling down the seacoast this summer to spend the time with my family I had occasion to go down with a number of our oil friends, and we noticed the oil near Newark Bay and some of the kills nearby. I incidentally asked them how that could be adjacent to their plants, and they said: "I guess we must be the guilty persons," and they promised me that they would take the matter up. I think the agitation we are having will eventually get somewhere. I honestly believe we should put more teeth in the law.

Mr. CHALMERS. I would like to ask the gentleman, just from a cursory glance, if this suggestion from Baltimore would be helpful?

Mr. RUTH. It is a little beyond my comprehension. I would like to study it. There is a movement on foot in New York, before a committee, to give separators for each individual ship, which would cost either two or three thousand dollars, according to the size of the ship. That matter has been referred to Mr. Moran's committee. That is too big a problem for me to decide.

Mr. BUCK. Mr. C. E. Wheeler desires to be recorded as appearing as a representative of the Factory Waste Commission of Connecticut.

The CHAIRMAN. The committee will meet to-morrow morning at 10 o'clock.

(Thereupon, at 4.40 o'clock p. m., the committee adjourned to meet again at 10 o'clock a. m., Thursday, December 8, 1921.)

COMMITTEE ON RIVERS AND HARBORS,
HOUSE OF REPRESENTATIVES,
Thursday, December 8, 1921.

The committee met at 10 o'clock a. m., Hon. S. Wallace Dempsey (chairman) presiding.

The CHAIRMAN. Gentlemen, the committee, as a result of an executive session, has in mind that the appointment of some subcommittees will be necessary to study certain phases of this subject, and they feel that until those committees have done their work and have reported to the full committee we are not going to gain a great deal by additional hearings or by additional testimony, particularly on the points that have already been fully covered by the statements which have been made. On that account we are going to limit the hearings as much as possible until the reports of these subcommittees have been made. Those who have come here to be heard we are going to hear, but we are going to ask you to be as brief as possible, particularly on matters that have already been covered. Anything that is new we welcome and want, but anything that is a repetition of what has already been said, as you can readily see, will not help us particularly and would simply take up your time, as well as our own, when we ought to devote it to the work of the subcommittees, because we regard this subject as an important one.

We will first hear the Members of Congress who are present, because many of them have other committees which are holding hearings. We would like everybody, just as far as possible, to conform to the five-minute rule of the House. Mr. Goodykoontz, we will be glad to hear you first.

STATEMENT OF HON. WELLS GOODYKOONTZ, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WEST VIRGINIA.

Mr. GOODYKOONTZ. Mr. Chairman and gentlemen of the committee, I shall be glad to limit myself in harmony with the five-minute rule. I appear here in my legislative capacity as a representative of a district whose greatest industry is the production of coal. It includes the Williamson field, the Logan territory, the Mullins field, and the great Pocahontas region. Coal is produced in eight of the nine counties in my district, and I should say there are something over 400 operations. Some of them good, some bad, some indifferent, but they are all struggling and trying to get along.

Our State formerly had on its statute books a law which forbade the putting into streams of sawdust or other deleterious substances calculated to destroy fish or impair the quality of the water. In the early days of the State such a law as that was all right, because in those days we had a great deal of good fishing and the people were a pastoral people, but, with the development of our State, we found that this statute was simply a source of constantly recurring grievance, and the result was that the State legislature repealed the act as being out of place upon the theory that our coal properties and sawmills and pulp mills and other industries of like kind and character were of more value than a few fish. It would involve our operators in very great expense, and I doubt if they could cope with the situation at all if such a law as is proposed here were enacted.

Mr. LAYTON. Mr. Goodykoontz, what is the watershed of your district?

Mr. GOODYKOONTZ. The navigable streams in my district are the Big Sandy, the Guyandotte, and the waters of the New River, known further down as the Kanawha River.

Mr. LAYTON. All flowing into what?

Mr. GOODYKOONTZ. They all flow into the Ohio.

It seems to me this question of dealing with the pollution of interior streams—I am leaving out of view the pollution of the ocean that affects the beautiful beaches along our coast—I have sympathy for the movement the object of which is to protect shore waters, but I am speaking of this other matter, and as a practical proposition it seems to me that it would be out of place to undertake to enact laws now to forbid the industries from ejecting matter into the streams until the municipalities are ready to consider regulations to prevent the pollution of the streams by sewage disposal. Of course I have not been present during all of the hearings and may cover old ground, but I know that in Europe the great cities there convert their sewage into

fertilizer. As it is now all water taken for municipal supply along the Ohio River must be treated before it can be used, and the fact that you put in matter from industrial plants would not affect that water to the extent that it would be potable without being chemically treated. There is Pittsburgh, just above Wheeling, discharging its great volume of sewage into the Ohio. There is Cincinnati, just above Louisville, discharging oceans of fecal matter right into the stream. One of the most abhorrent things to our minds is the contamination of water which we drink with that sort of matter, and until we get ready in this country to deal with the problem in its broad aspect we should not undertake to single out the industries.

Now, take the situation of the coal mines, sometimes you will find a lease, we will say, of 1,000 acres, and that lease is cut up by half a dozen streams or watersheds. Water is expelled from the mine at such places as it can be let out. You drive to the surface following the dip of the coal, which is usually a little west of north, but the strata may be distorted so that the water will have to go in different directions, so that it is not unusual to have a dozen outlets for water from a coal mine, and in that event you would have to install a dozen different plants to treat such water. This water itself has some advantageous effects, as, for instance, there is a certain amount of sulphur in all water drained from mines, and you know what effect sulphur has upon bacteria. The iron in the water accomplishes a certain purpose, and if you are going to say here in a broad way that you can not put anything into the streams that is unwholesome in respect to the water when drunk by human beings or that has certain effects on fish, or the propagation of fish, then you are going to have a sweeping law that will manacle these industries and will add to the productive cost of coal, an essential element in the daily life of the people of the country.

I think I have said about all I want to say, except that I know this highly intelligent committee will carefully consider the effect such a law as this proposed would have if enacted, and the majority of the people of my State—I am not speaking of Wheeling or of any particular city—but I am speaking of the vast areas of our State—would be violently opposed to any such legislation as is proposed here.

The CHAIRMAN. We are very much obliged to you, Mr. Goodykoontz.

Mr. Ketcham, we will hear you next.

STATEMENT OF HON. JOHN C. KETCHAM, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN.

Mr. KETCHAM. Mr. Chairman and members of the committee, I will not use the entire five minutes. I simply desire to present a series of statements from the paper manufacturers of southwestern Michigan, and in order that I may be sure not to use all of the five minutes, I will simply read two paragraphs of a statement that I have personally prepared and then submit for the record the telegrams which I have received from these men, which is the very best evidence.

Southwestern Michigan has in recent years come to a place of national leadership in the manufacture of paper, and inasmuch as H. R. 7369 in its present form vitally concerns this great and growing Michigan industry, I desire to present to the committee a number of protests from our manufacturers against the passage of the measure in the form it was introduced and the reasons for their opposition.

At this point, Mr. Chairman, I desire to insert in the record the telegrams I have thus far received and ask permission of the committee to add thereto some others I am expecting during the course of the day.

H. O. Parker, secretary French Paper Co., Niles, Mich.: "In our own case we have several hundred thousand gallons of waste water every day that must be taken care of in some manner. This waste water contains small particles of clay and a certain amount of very fine pulp fibers that get away from our paper machines, and while this water is perfectly harmless and you might say clean, it contains, within the strict meaning of the words, 'refuse matter,' which is prohibited by this bill. You can readily understand that it would be an enormous expense to filter all this waste water."

G. H. Gerpheide, secretary Bardeen Paper Co., Otsego, Mich.: "We desire to protest against the passing of this bill, which, if enacted into law, would work an unwarranted hardship on paper mills by depriving them of outlets for their

waste water, which does contain a small proporttion such as is described in the bill, but not in sufficient quantities as to harm the streams into which these waste waters flow."

A. B. Thomas, general manager Eddy Paper Co., Three Rivers, Mich.: "This would be a distinctive handicap to all manufacturers, as nearly everyone deposits a certain amount of harmless refuse in running streams; the waste water from paper mills is not detrimental to streams. We use at Three Rivers about 5,000,000 gallons of water per day, which is conveyed to the river. It will be impossible to get rid of this harmless water elsewhere."

H. C. Soay, resident manager Eddy Paper Co., White Pigeon, Mich.: "This would be a distinctive handicap to all manufacturers, as nearly everyone deposits a certain amount of harmless refuse in running streams. The waste paper from paper mills is not detrimental to streams. We use at White Pigeon 3,000,000 gallons water per day. It is conveyed to the river, and it would be impossible to get rid of this harmless water elsewhere."

Watervliet Paper Co., Watervliet, Mich.: "Waste water from our mill but slightly alkaline. Dilution so great that alkalinity is hardy detectable and is not destructive. The expense of neutralizing 1,500,000 gallons of water per day is incalculable and would be a serious hardship."

Wolverine Paper Co. and Mac-Sim-Bar Paper Co., Otsego, Mich.: "Strongly protest passage bill prohibiting paper mills draining waste water into river. Our waste water contains nothing harmful. This bill would require needless expenditure of thousands of dollars for disposal system."

W. T. Mullen, for Mullen Bros. Paper Co., St. Joseph, Mich.: "Emphatically protest against the wholly uncalled for drastic restrictions in House bill 7369. The waste water from any paper mill is not near as dirty as the refuse from any city sewer nor does it cause the disagreeable conditions that city sewers cause. Are we as a Government endeavoring to break down by drastic and uncalled for laws the industrial life of the country or are we endeavoring to build up the country through some consideration for its industrial life. I can not imagine how anyone could conceive a bill of this nature and if such a piece of legislation should through some mishap become a law all paper mills located on navigable streams would be practically out of business until by an expenditure of large amounts of money they would be able to dispose of their waste water. This is a piece of legislation uncalled for which helps no one and hurts many."

G. W. Gilkey, general manager Michigan Paper Co., Plainwell, Mich.: "In re Appleby bill the waste from our paper mills are not detrimental to the health of the inhabitants in the vicinity of the streams or to the fish therein. This bill if passed would be a hardship upon all paper mills and would be an unnecessary expenditure of thousands of dollars to erect and maintain a plant to take care of our outflow."

These statements clearly show the practical impossibility of operating such paper mills if the bill in its present form becomes a law. All of these mills involve a large capitalization as you know, give employment to thousands, and in many cases are the principal industry of the town or the city where they are located. Inasmuch as the modification of the bill desired by paper mills can in no possible manner affect the main purpose of the measure as indicated in the enacting clause of this and similar bills, I trust that it may be amended in accordance with their wishes.

The CHAIRMAN. Just briefly, what is their suggested amendment?

Mr. KETCHAM. I have not the bill at hand, but the suggestion is the removal of the all-inclusive language which includes manufacturing plants and refuse matter of all kinds. That is certainly inclusive of these factories.

The CHAIRMAN. What we would like, Mr. Ketcham and Mr. Goodykoontz, so far as we can get it, are suggestions from industries such as the mining industry and the paper industry as to a practical method, from a cost standpoint, of treating the refuse from mines and mills and municipalities, so that it will not pollute the streams.

Mr. KETCHAM. So far as the interests of our particular group are concerned, rather than attempt any discussion of any system that would be economically feasible, may I suggest a geographical amendment that I think would suit our people very much, and that is to eliminate the Great Lakes section from the provisions of the bill, and I think that would not involve any long discussion.

Mr. RADCLIFFE. Before the gentleman finishes I would like to ask him a question. You are representing here to this committee the opinion of the manufacturers?

Mr. KETCHAM. Yes, sir.

Mr. RADCLIFFE. I do not know whether you would care to answer the question or not; probably you would not; but what do you suppose your opinion would be if you had as great an organization of the great mass of the people who realize the detriment that the continual dumping into the streams of this matter will have on the health and welfare and future of the State? What do you suppose you would say if they asked you to speak for them?

Mr. KETCHAM. I have no objection to answering the question. I would say that so far as the particular matter which is discharged into the rivers by the mills whose statements I am presenting—that so far as the deleterious effects upon the rivers and upon the water supply is concerned, in comparison with the effects of the discharge from the sewers, it would be infinitesimal.

The CHAIRMAN. In other words, you think we have got to remedy both?

Mr. KETCHAM. Yes, sir. What I am trying to say—and, possibly, have not made clear—is that the sewage as at present discharged is much more deleterious in its effects than the discharge from the particular factories whose telegrams I have presented.

Mr. RADCLIFFE. You represent the manufacturing end of this proposition here, and probably the committee will take care of the city end of the proposition. We are trying to find out whether two evils are going to make a right out of this proposition from the public standpoint. I am trying to get in the record and to get clear in my mind why the manufacturers should be so much concerned about the city sewage when the chances are that this committee is going to take care of the city sewage as another proposition. We want to find out what the manufacturers think they ought to do or are willing to do toward the elimination of this great waste going into the rivers.

Mr. KETCHAM. I would simply say in reply that the telegrams which I have presented have been with reference simply to the bill and other related bills of a similar character which, as I understood, had application not to the question of the disposal of the sewage and not related thereto but simply to the proposition indicated in the enacting clause, and it seemed to me that while the language of the bill as drawn was broad enough to impose great hardships upon these factories in no way was the discharge of the material from these factories related to the purposes of the bill.

Mr. LAYTON. Will the gentleman answer me a question? I should judge from your statement that ultimately you think this question must be treated from a regional standpoint?

Mr. KETCHAM. Exactly so, sir.

Mr. LAYTON. And that there might be some places and are some places in the United States where the conservation of the food supply of the waters would be of such tremendous importance that something would have to be done to protect that supply, but that in your particular region, which you are representing, it is infinitesimal as compared with the damage which might ensue to manufacturing and to the employment of labor?

Mr. KETCHAM. Yes. I would not want to be misunderstood, Mr. Chairman and members of the committee, as saying that the problem of pollution of the waters from the public-health standpoint is not a very vital question, and I do not want to get into any complications in this record so far as I am concerned on that point. I am simply trying to meet the situation which this bill has presented.

Mr. CHALMERS. I take it you are speaking particularly for the paper mills of Kalamazoo and of Niles?

Mr. KETCHAM. I am very sorry to say that Kalamazoo, which is the leading paper-manufacturing center of the United States, is not in my district.

Mr. CHALMERS. It is close to it?

Mr. KETCHAM. Yes; it is very close to it, and our factories are all related to it.

Mr. CHALMERS. As I remember the geography up there the refuse from these mills would go into the St. Joe River?

Mr. KETCHAM. Into the St. Joe and Kalamazoo Rivers.

Mr. CHALMERS. And would finally reach Lake Michigan?

Mr. KETCHAM. Yes, sir.

Mr. CHALMERS. And in the course of their flow down the stream would be purified, in the natural way, before reaching the lake?

Mr. KETCHAM. Yes, sir.

The CHAIRMAN. Mr. Ketcham, all the members of the committee feel they would like the cooperation of gentlemen like you and Mr. Goodykoontz. We think that the subject is a very live subject and in the end is going to meet with some solution, and we are trying to get as near a proper solution as we can, and we would like very much to have any helpful suggestions. In other words, it is easy enough to say, "Don't do anything," when you meet a problem of this kind that is difficult. We know that gentlemen like you two gentlemen can do a great deal better than that; that you can help solve the problem in a constructive way and we want your help.

Mr. KETCHAM. I would say in reply, Mr. Chairman, that if the geographical amendment of this bill can be granted, I would be glad to pledge the committee the very best of my ability in the direction indicated.

The CHAIRMAN. It is a good deal more serious than that. We are not going to try to legislate for congressional districts. We are going to try, if we prepare any legislation, to make it apply to the country, and we mean seriously what we are saying, that we do want your help.

Mr. GOODYKOONTZ. Mr. Chairman, responding briefly to your inquiry and to what I might say here to aid the committee, I have this to suggest. As one Representative of the people, I know they would be delighted to see their streams restored to their pristine beauty and purity, and I believe the chairman is voicing a great patriotic sentiment when he indicates that something should be done to relieve these streams of the pollution they now carry, and I would suggest that the city engineers—the engineers of the great municipalities in this country—perhaps by direction of a central control, make a study of the matter and present a comprehensive plan, not regional but Nation wide, with a view to getting action in both directions. It would be useless to keep out the matter from industrial plants if you are going to continue to pollute the streams with sewage—a thing most repulsive to our thought and minds. In other words, if you are going to purify these streams, do it all at once, because if you keep out the matter from the industrial plants only you have yet got to treat your water which you use for your city supply.

The CHAIRMAN. We thank you very much, Mr. Goodykoontz. That is a very helpful suggestion.

Mr. Michener, of Michigan, who has been attending the hearings, desires to have his appearance noted in the record.

Mr. Morrow, we will be pleased to hear you now.

STATEMENT OF MR. J. D. MORROW, VICE PRESIDENT NATIONAL COAL ASSOCIATION.

Mr. MORROW. Mr. Chairman, I represent the National Coal Association, which is an organization of bituminous coal producers of the United States. This legislation is of direct concern to us, particularly the bill proposed by Congressman Rosenbloom.

I wish to be very brief, Mr. Chairman, and will be brief. Our situation with respect to this question is this: Up to the time this bill was proposed it has been the general understanding of mining engineers and of public health authorities, so far as the question has been studied, that the presence of mine water in our streams was not deleterious to the public health, but on the contrary, was beneficial. The vice president of the D. & H. Coal Co. yesterday advised you of the conclusions of the United States Geological Survey in some of the water-supply studies they have made. There is other evidence of the same kind (which is in the record) so far as we understand it from a scintific standpoint with respect to the discharge of mine waters, particularly those waters which carry some acids—not all mine waters do. Under those conditions, to be suddenly confronted here with a measure of this kind, which under drastic penalties would forbid the discharge of mine water into the streams, is a very serious matter for this industry.

The CHAIRMAN. It does not seem to me, Mr. Morrow, that any legislation would take the form so that it would affect the discharge into the streams of material of any kind, refuse, or other kinds of material that is not harmful. I do not think you need to discuss it on the basis of the discharge from mines

that is not harmful. What is not harmful I do not believe will be dealt with in any legislation that will be suggested.

Mr. MORROW. That is the precise question at issue, Mr. Chairman. This bill of Mr. Rosenbloom's assumes it is harmful.

The CHAIRMAN. I do not think any legislation will be adopted which will make it criminal or will penalize the discharge into streams of anything except what is harmful.

Mr. MORROW. I am very glad to have that assurance from the chairman of the committee.

The CHAIRMAN. I simply say that as my own individual notion, but, so far as I have been able to gather it from our conference, that is the feeling of the members of the committee. I do not think you need trouble yourself about that aspect of it. I do not think you need worry about the fact that the discharge of something that is absolutely harmless into a stream is going to be prohibited.

Mr. MORROW. Very well, I will pass that over. I would like to say one word with reference to the situation on the Youghiogheny and the Monongahela and the upper portion of the Ohio, which has been referred to as seriously impregnated with acidulous water. Gen. Beach stated yesterday that the Youghiogheny—I presume below Connellsville—was, perhaps, the most acid water which he knew about in any stream in the United States. I think it is fair to say to this committee that it is, in my estimation, one of those condtions of acidulous discharge into streams that we will have to face quite forcibly. There is no section of the earth's surface that I know about, outside of the anthracite region, in which there is such intensive mining as in that section of Pennsylvania and northern West Virginia. There are thousands of abandoned coal mines there that are discharging a highly acid water into the streams. I think that will continue. I do not believe, from the information I have, that it will ever be practicable to stop the discharge of water from those old workings, and so long as that water goes in there you will have an acid discharge.

If the presence of the acid in these streams is objectionable from the standpoint of navigation or from some other standpoint, it will have to be dealt with after it is in the river, because it is inconceivable to me that you will try to dam up the ground water in that territory of Pennsylvania and northern West Virginia, with a surface structure broken up by cave-ins and by old mines, as it is now. When you consider that it covers an area 150 miles long by about 200 miles wide, you can get some idea of the practical difficulties that would be faced.

Mr. LAYTON. In other words, you can not open a coal mine without developing sulphuric acid?

Mr. MORROW. In some sections.

Mr. LAYTON. Where sulphur is present?

Mr. MORROW. Yes, sir.

Mr. LAYTON. You let the oxygen in and the chemical process produces sulphuric acid?

Mr. MORROW. You will have it if that is the case.

I will file with the committee a letter which I have from a councilman of Greensburg, Pa., calling attention to the fact that in the State of Pennsylvania the State board of health permits the dumping of city sewage into the streams where those streams are impregnated with acidulous water, and if this bill introduced by Mr. Rosenbloom should be enacted they would immediately have to put in a city sewage disposal plant in the interest of public health.

The CHAIRMAN. Do you know whether there has been any chemical analysis to show that the polluted character of the sewage is diluted appreciably after being mingled in the streams where there was acid from the mines?

Mr. MORROW. I can not answer specifically, but I do know in some cases where the State board of health authorities in investigating instances of disposal of sewage have come to that conclusion. Those were in particular instances where the mine water in the streams was analyzed and where tests were made, but just what conclusions might be drawn I can not give you; I do not know. I mention these details simply to bring forcibly to the attention of the committee the very great complexity of this question so far as it relates to the discharge of mine water. It is a tremendous volume of water, and it is of vital importance to the consumers of coal as well as to the producers, and accordingly it is a question that merits careful consideration. I

am sorry that it is not possible for us at this time to make practical suggestions as to the way the mine water may be treated, because we have no experience in this industry. There has been no attempt to treat it, because there would be nothing but a loss if you did. Accordingly, that is a matter that would have to be looked into, and if the committee should feel that they would like to have us do so we will be glad to do it.

Mr. RADCLIFFE. In making this investigation as to what effect the discharged water had on the city sewage was that investigation made at the expense of the city or by the mining engineers or by the State authorities?

Mr. MORROW. I can not tell you. My impression is that the case came up in this manner: The State department of health of Pennsylvania ordered the city authorities to put in city sewage disposal plants; that then the State authorities made an investigation of the matter and withdrew the order for the sewage disposal plants after making the investigation.

The CHAIRMAN. In other words, you think that whatever there was in the way of an investigation was made by the State board of health of Pennsylvania? We can obtain that information by getting into touch with the department?

Mr. MORROW. Presumably you can. I do not think there would be any difficulty about that.

The CHAIRMAN. As I understand, while, generally speaking, you believe that mine discharges are not harmful, you do recognize that they have been harmful in this Youghiogheny district?

Mr. MORROW. No; I would not even admit that. It depends on what you mean by "harmful." The testimony yesterday was to the effect that the damage done by the water in the stream to navigation amounted to about $57,000 a year. That was the amount of damage after investigation by the Army authorities, but the cost of the chemicals alone to neutralize that would run three or four million dollars a year.

The CHAIRMAN. What do you mean by $57,000?

Mr. MORROW. As I understand, that was the estimated damage to the Government works and to the vessels that were navigating the rivers.

The CHAIRMAN. But Gen. Beach did not find that—that was simply what happened to the vessels and the Government works in that section of the river. He said that the acid water went into the other streams and permeated the other streams for a long distance below.

Mr. MORROW. The investigation that was referred to covered not only the Youghiogheny and the Monongahela but the upper Ohio River as well. It is the entire Pittsburgh district that those figures refer to, as I understand it.

The CHAIRMAN. That may be the case.

Mr. CHALMERS. The majority of damage has been to the works, their dams and locks, not only the vessels?

Mr. MORROW. That is right.

Mr. RADCLIFFE. Looking at it from the other standpoint you say this acid in the streams neutralizes the vegetable matter, and it also must have lost the real force of the acid matter. Now supposing that a city were taking care of its sewage, have you made an estimate of the amount of damage the acid alone would do to public works?

Mr. MORROW. No. There is natural material in the stream that will neutralize it in a few miles—as soon as it is a few miles below you will not find the acid; it has been neutralized by the material in the water.

Mr. LAYTON. That would depend on the character of the soil?

Mr. MORROW. Yes, sir.

The CHAIRMAN. You have not any suggestion to make as to where we could get information, except the State Board of Health of Pennsylvania?

Mr. MORROW. That is one place. The water-supply discussions of the United States Geological Survey you will find illuminating.

The CHAIRMAN. Those were referred to yesterday?

Mr. MORROW. Yes, sir.

The CHAIRMAN. Aside from what has been referred to, you would suggest the State Board of Health of Pennsylvania?

Mr. MORROW. Yes, sir.

The CHAIRMAN. I thank you very much.

Mr. STRONG. I just came in and I did not hear all that has been said. I make the request that before the committee takes any action with reference to the

discharge of acids, etc., into streams, because of the magnitude of the coal industry, being the largest basic industry in the country, that this committee set aside a day for a hearing for the coal people. I make that request not only on behalf of the coal people but as a member of this committee.

The CHAIRMAN. There will be no difficulty about their being given such opportunity to be heard as you suggest.

Mr. MORROW. I am not trying to bring out the details now, but I shall be glad to do so if you want any details.

The CHAIRMAN. So far as you can furnish it to us, we should like the result of any scientific experiments, showing that the discharges from mines are or are not harmful, giving us the location and giving the report of those experts, and of course if they were made by disinterested parties they would be of greater value than by the coal men themselves.

Mr. MORROW. I appreciate that.

The CHAIRMAN. And if the public authorities have made any investigations we will be very glad if you will furnish us with their reports.

Mr. MORROW. We can do that. It is possible that some coal mining companies may have made some studies of treating the water from their own mines—there may be some cases of that kind.

Mr. LAYTON. Do the interests you represent recognize the pollution of the water through your mine water as being pollution?

Mr. MORROW. They have not so regarded it.

Mr. LAYTON. You have not regarded it as deleterious to public health, but you have not instituted any special experiment in order to correct it?

Mr. MORROW. No, sir.

The CHAIRMAN. Your suggestions have been very helpful and we appreciate your aiding us.

Mr. MORROW. We indorse fully Secretary Hoover's suggestion that the discharge of acids into streams be investigated thoroughly before any legislation is drafted to deal with that subject. We shall be very glad to cooperate with your committee, or any subcommittee that may be appointed, or any department of the Government which is designated to make such study, and will endeavor to place before them all the practical and helpful information we can to make the facts entirely clear.

I thank you.

(The letter submitted by Mr. Morrow from Mr. William T. Rial, Greensburg, Pa., follows:)

GREENSBURG, PA., *December 5, 1921.*

Mr. J. D. A. MORROW,
National Coal Association, Washington, D. C.

DEAR SIR: Referring to the hearing before the River and Harbors Committee of Congress, to be held next Wednesday, at which time testimony is to be offered as to the effect of the discharge of "sulphur" water into streams, I desire to call your attention to a situation which exists in this community of a population of 25,000 surrounded by coal operations which discharge "sulphur" water or mine drainage into the two small streams through this town and into which two streams sewage has been emptied, the sulphur water has the effect of absolutely neutralizing any dangerous or obnoxious matters which may be in the sewage. Were it not for the sulphur water in a very great many sections in western Pennsylvania where small streams act as open sewers and where the mine water is used as a neutralizing agency, it would be impossible to live in some of these places.

I have been a councilman of the borough of Greensburg for six years and the question of a sewerage disposal plant would have been forced upon us by the State department of health many years ago were it not for the fact that through the agency of sulphur water from the mines a disposal plant becomes unnecessary. When, however, upon the exhaustion of the coal the sulphur water can no longer be pumped into the streams, a sewage disposal plant will become a necessity. I call your attention to these facts in connection with the matter now before the River and Harbors Committee.

Very truly, yours,

WM. T. RIAL.

STATEMENT OF MR. F. P. KLUND, ERIE, PA.

Mr. KLUND. Mr. Chairman and members of the committee, I am the representative of simply one of the pulp and paper manufacturing industries of the country, a concern making sulphite pulp paper. As one of those companies we certainly would not care to antagonize the enactment of any bill which is for the health of the people, for the simple reason that the health of our own employes and of the city is very vital. On account of our location in the city of Erie we are brought into contact with both phases of the situation. The city takes its water supply within a very few miles of the outfall of our own sewers. A few years ago the city was faced with an epidemic of typhoid fever caused by the flowing of sewage into the intake pipes. The city itself has gone to the trouble and to a very great expense, amounting in the neighborhood of $2,000,000, to install a large sewer through the city, about 22 inches in diameter. This was necessary to protect not only the inhabitants from the sewage by the installation of a disposal plant but also to protect the citizens from loss of life. A flood recently occurred—in 1915, if my recollection is correct—which caused the loss of life of between 30 and 40 people.

The introduction of this bill has served a very useful purpose by bringing to life an old statute which, I think, very few manufacturers knew existed. The industry which I happen to represent would be very glad to see a new statute enacted which would take care of both sides of the question.

A statement was made yesterday at the hearing that a great many manufacturers had gone to very little pains to overcome the sewage difficulties. From my own personal experience in our own company, covering a period of nearly 23 years, I know that we have had this matter constantly before us, and in the very beginning of the plant we installed methods for the correction of the sewage. Sulphite wastes are very slightly acid; they consist mostly of the organic matters from the wood and are perfectly sterile. They can not produce disease. The acid is so slight when discharged into the waters of Lake Erie that we can not find any evidence of it at 50 feet from the discharge of the sewers. As a further proof that it does not affect the city drinking water we take our own water supply within 2,000 feet of the shore. This water is, of course, filtered. We could not use the water, even if there were no pollution from industrial or sanitary waste, but the State is extremely drastic and would not even permit in its present state the corrective measures which I think it intended. This was brought very forcibly to our minds a few months ago when there was a bill presented before the legislature of Pennsylvania and it had particular reference to the coal-mining industry. One of the clauses of the proposed bill, in its wording, if carried out strictly to the letter, would have meant that every corrective means that could have been applied or would be possible to apply they could not apply.

The pulp and paper industry, I can assure you, Mr. Chairman and members of the committee, will endeavor to cooperate in every way toward the solution of this problem. We have an installation which, as I said, has been in operation for quite a number of years, and contrary to the opinion of a great many it simply does not pay. It costs a great deal more—we put it in simply to take care of the waste problem. The question of waste from a pulp mill is tremendously difficult. It has been the subject of research not only in this country, but in Canada, in Scandinavia, in Germany, but no practical solution has yet been found.

In common with a great many mills we maintain a staff of experts—I do not like to use the word "experts" because it is a much abused term, but these men are investigators and that problem is constantly before their minds. Every man in this organization—and I know that other pulp and paper mills are doing the same thing—are perusing all the literature of this country, of England and of Europe, simply to find a solution which is workable. I thank you, gentlemen.

The CHAIRMAN. Do I understand that your mill is not acting alone in the effort to find a cure for its refuse, but that it is acting in conjunction with certain other mills?

Mr. KLUND. Yes and no. For our own particular plant we are conducting investigations continuously. The American Pulp and Paper Association, which is a general clearing house, is a very close working organization. They exchange the views of the different mills and the technical society, which is a branch of that association, meets twice a year. The members of that associa-

tion, I know, are in consultation over this very problem. I know that this past year we put in an experimental plant to look after the waste from what we call the digestive operation, but the thing was not practical.

The CHAIRMAN. Do you think that we can get the benefit of the studies of these experts and of all of the literature that they have been using upon the question through communicating with the American Pulp and Paper Association?

Mr. KLUND. I believe so, Mr. Chairman. I can assure you, from our point of view, that we shall be very glad to cooperate with the Government and we shall be very glad to submit all the information which we have.

The CHAIRMAN. What is the name of your concern?

Mr. KLUND. The Hammermill Paper Co. We are located within the city limits of the city of Erie.

The CHAIRMAN. We thank you very much.

STATEMENT OF MR. JOHN I. TIERNEY, SECRETARY, MANUFACTURING CHEMISTS' ASSOCIATION OF THE UNITED STATES.

Mr. TIERNEY. Mr. Chairman, this subject is of such tremendous importance to our industry, the Manufacturing Chemists' Association, which I represent, that I prepared a statement, but the recommendation which is contained in the statement was so admirably presented to you by Secretary Hoover yesterday that I shall ask merely to file the brief for the record and to discuss only one or two points.

The degree to which waste may change the character of the stream will vary with different conditions in the various sections of the country, and even with varying conditions on the same stream. We have in mind the case of one large chemical plant, the effluent from which is of alkaline composition. Tests of the water at and below the point of discharge when compared with tests of the water above showed a less degree of alkalinity below than above. It is a matter for scientific determination, therefore, to fix the degree to which the alkalinity of the river was affected by the discharge of the alkaline substance.

That was at Syracuse, Mr. Chairman, and the experience there would answer the question which you put to Mr. Morrow.

The Solvay Process Co. in the manufacture of alkalies discharged a considerable volume of white effluent. It caused some disturbance in the local stream and was the subject of examination by city engineers and the municipal authorities. It was finally happily solved by the utilization of the effluent for the treatment of the city sewage, so that instead of being of injury to the town it was a distinct advantage, a real blessing to the town.

Undoubtedly an investigation of this problem——

The CHAIRMAN (interposing). Before you pass from that——

Mr. TIERNEY. Yes, sir.

The CHAIRMAN. Was the refuse from the Solvay Co. sufficient to treat the entire city sewage?

Mr. TIERNEY. That is my understanding.

Mr. Chairman, this matter was discussed rather informally at the last meeting of our executive committee by Mr. Pierce, the president of the company.

The CHAIRMAN. The president of the Solvay Co.?

Mr. TIERNEY. Yes, sir.

The CHAIRMAN. Will you be good enough to furnish the committee with a full report on the question?

Mr. TIERNEY. I shall be glad to do that.

The CHAIRMAN. If you will send us something from the city as well as from the Solvay Co. we will appreciate it very much.

Mr. TIERNEY. I shall be very glad to do that.

Mr. RADCLIFFE. What would you say to the committee was the condition of the water in Lake Onondaga in reference to fish life since refuse has been discharged from places on the bank of the lake?

The CHAIRMAN. That would be individual. I do not think we will get anywhere on that, because all of the other factories there have continued to discharge their refuse, I take it.

Mr. TIERNEY. I take it; yes, sir.

The CHAIRMAN. You are talking about one instance?

Mr. TIERNEY. Yes, sir; a very large one, where the discharge has been turned to a useful purpose.

Mr. RADCLIFFE. Lake Onondaga is a dead lake, practically, so far as the fishing industry is concerned. I received that information from a resident on the lake shore who said it may be caused by the Solway Co. refuse.

The CHAIRMAN. Undoubtedly that is true.

Mr. TIERNEY. Any consideration of the question of factory waste must take into account local conditions. A manufacturing plant may be the sole or principal support of a community, but would Congress be justified in closing its doors because its effluent made an angler's holiday afternoon less thrilling?

That question was put to the Supreme Court of Pennsylvania, and the court decided that operation of the coal mines contributed more to the general welfare than did fish life in the rivers affected.

Whenever the problem arises in the interior the community in which the factory is situated may be depended upon to work out a solution much more satisfactorily than could Congress, and Congress would do well to leave to the city councils and to the State legislatures the framing of ordinances and statutes to control in the particular cases needing attention.

Indeed, it is a serious question whether Congress has the power to include the streams of the interior in any legislation upon this subject. The Supreme Court has determined time and again that the Federal Government has no ownership of, or jurisdiction over, nonnavigable streams of a State, and that it has only a negative power as to the navigable rivers, which may be exercised only to prevent obstruction to navigation.

That doctrine is explicitly affirmed in the case Kansas *v.* Colorado (206 U. S., 46) in which the court held:

"That the Government of the United States is one of enumerated powers; that it has no inherent powers of sovereignty; that the enumeration of the powers granted is to be found in the Constitution of the United States, and in that alone; that all powers not granted are reserved to the people. While Congress has general legislative jurisdiction over the Territories, and may control the flow of waters in their streams, it has no power to control a like flow within the limits of a State, except to preserve or improve the navigability of the streams; that the full control over those waters is vested in the States."

The CHAIRMAN. That was fully discussed, I may say to you, on the floor of the House when the general water power legislation was under consideration. I think you would find that discussion very illuminating. I am afraid that your bill is a little bit narrower than the cases go.

Mr. CHALMERS. This is very interesting, Mr. Chairman, but the question is whether we have time to hear this gentleman.

Mr. TIERNEY. I have only two or three more paragraphs.

The CHAIRMAN. You may proceed.

Mr. TIERNEY. In reply to the statement, Mr. Chairman, my home is in Colorado, and it is an article of faith out in that section of the country—

Mr. LAYTON (interposing). What is?

Mr. TIERNEY. The right of the States to jurisdiction over waters in the States as conferred upon them by the Constitution and affirmed again and again—and conferred in the enabling act.

Mr. LAYTON. I understand that you are a constitutionalist?

Mr. TIERNEY. Well, I believe that we should fully assert our rights.

This, I think, is pertinent:

The rule announced in that decision restricts Congress from legislating at all in regard to nonnavigable streams and as to navigable streams you may exercise only a negative power to prevent obstruction to navigation. We contend and can show that the discharge of effluents from chemical plants does not impede or obstruct navigation.

But if Congress, nevertheless, enacts a law to prohibit plants located on navigable rivers discharging their effluents into the waters, while it is powerless to enforce similar prohibition as to factories on nonnavigable streams, there will result unequal conditions among competitors in the respective industries.

The practical aspects of the question, therefore, as well as the provision of the Constitution and the rule of law should convince Congress that the safest and wisest course is to leave to the city councils and to the State legislatures the solution of this industrial problem, at least to the extent that it exists in the interior.

And as stated above—referring to what is in the beginning of the statement—as stated above, information concerning the relation of factory waste to the pollution of harbor waters is so meager and uncertain that the wiser

plan would be for Congress to direct an investigation to be made of that phase of the problem before drafting a measure to deal with it.

Now, there is just one more point, Mr. Chairman, I would like to submit to you. We earnestly hope that in any measure you frame you provide for its administration in the Department of Commerce. The Department of Commerce is the logical and proper place for it. I think you were afforded a most splendid opportunity to see the reason why business prefers the Department of Commerce rather than another department, in the contrast that was presented in the testimony of Gen. Beach and his manner, and the statement of the Secretary of Commerce and his manner yesterday. On one hand you had the constructive, thoughtful consideration of the problem presented to you by a man of business; and on the other hand, you had the narrow view that subordinates all enterprise and all initiative to cast-iron rules and regulations—and I say this with no disrespect to Gen. Beach, because he is the product of his training; he is of his kind, but his is a restricted, circumscribed viewpoint. I would ask you in the framing of your law to make it as explicit and comprehensive as possible and delimit the twilight zone of departmental regulation as clearly and narrowly as may be.

The CHAIRMAN. In other words, you are not in favor of——

Mr. TIERNEY (interposing). Of bureau government.

The CHAIRMAN (continuing). Of our passing a law which would leave the determination of what is crime and what is not crime to a department.

Mr. TIERNEY. Absolutely not. I was overjoyed, Mr. Chairman, to hear you announce your opinion on that phase of the question yesterday, and I hope that that attitude will be steadfastly adhered to by you and by the committee.

The CHAIRMAN. I do not think legislation of that kind would be constitutional anyway. So far as the different departments are concerned, Mr. Tierney, here is the trouble about that: The legislation ought to be conservative and carefully framed in the first instance, because you have no assurance as to who is going to be the head of any department at any particular time.

Mr. TIERNEY. Absolutely not.

The CHAIRMAN. There is just one suggestion I would like to make. You have given us a very helpful and very illuminating address, and we appreciate it; but are you not wrong in this—are you going to get the same results from a sectional or regional or district area as you would from a study that embraces the best thought of the whole country? If you leave a question like this to be considered by this village in Colorado and that small city in Connecticut and another place in New York, without the interchange of thought that results from a nation-wide study, are you making much, if any, progress, or can you hope for much result?

Mr. TIERNEY. Mr. Chairman, I think you can. One's opinion, of course, may depend upon the frame of mind, the political education and the political school in which one was brought up. I think you will get better results by leaving it to the communities and to the State legislatures. When an abuse arises or an evil arises there is immediate complaint from those who are adversely affected. They take it to their city councils and from the city councils it goes to the State legislatures, and a remedy is provided after some years, perhaps, but the American people generally provide a remedy for the ills that confront them, and they will do it locally, and do it to better advantage, without visiting any unnecessary hardship or any injustice upon any of the parties to the controversy.

The CHAIRMAN. We have here an evil in the pollution of the streams, and I think we all concede it is an evil. I think the Secretary put it very well when he said that it is one of long duration. If you attempt to abate an evil of that kind, and do it hastily, you are apt to do more harm in percentage than you do good.

Mr. TIERNEY. There is no doubt about it.

The CHAIRMAN. At the same time it is one of wide extent and interests the whole country, and it seems to me it ought to have the very best thought of the country in cooperation—not segregation, but in cooperation in order to solve the problem.

Mr. TIERNEY. Yes; but let me cite a particular case, Mr. Chairman. From the time I was a very small boy, there was a controversy between the cities of the State of Rhode Island and the cities of the State of Massachusetts over sewage discharged by the city of Worcester into the Blackstone River. The controversy was brought up in the different legislatures and was carried through the different courts to the Supreme Court of the United States. The

differences finally were composed and sewage disposal works were established at Worcester and along the Blackstone Valley. The problem now is passed, and no act of Congress was necessary. Those things can be done locally. This was a case, mind you, between the cities of two States.

The CHAIRMAN. I am talking about a solution of the problem rather than the carrying out of what has been determined to be a wise program.

Mr. TIERNEY. Yes; I know that, but I want to support my position as strongly as I can, Mr. Chairman, and I will ask you to give it careful consideration.

The CHAIRMAN. We certainly will.

Mr. TIERNEY. That is, the application by local authorities of the remedy for the situation.

Mr. LAYTON. You do not oppose, of course, Congress having cognizance over strictly national situations?

Mr. TIERNEY. No, indeed, Doctor.

Mr. LAYTON. It is only in the interior that you believe local influences do govern, and ought to govern, and will be more helpful in every way?

Mr. TIERNEY. I think they will be much more efficacious.

(The entire statement submitted by Mr. Tierney follows:),

WASHINGTON, D. C., *December 7, 1921.*

COMMITTEE ON RIVERS AND HARBORS,
House of Representatives.

GENTLEMEN: In the consideration of the several bills providing penalty for pollution of harbors and navigable waters your committee must give thought to the result of such proposed legislation upon the industry of the entire country and as it affects the welfare of all the people.

The magnitude of the question before you can be realized when you reflect that if certain of the provisions of the more drastic bills were enforced literally as written there would very shortly be a complete stoppage of the wheels of industry. If you close our chemical plants by ill-considered and unnecessary laws and regulations prohibiting the discharge of effluents that are not injurious you will strike a blow at all industry, for every article of manufacture at some state of its production requires the action of chemicals.

Your task is to frame a law for correction of conditions damaging to some citizens, but the operation of which will not visit tremendous losses upon a many times greater proportion of our population. It would be most unwise to enact a measure intended to remedy unfortunate conditions affecting the beaches and fisheries of the Atlantic coast but which would strike at the heart of the industrial life of the Nation.

It would seem, therefore, that before undertaking to frame a measure so far-reaching in its consequences to all the people you should have at hand for your guidance facts established by a scientific investigation of the effects of refuse discharge upon the waters under Federal jurisdiction. Especially is the need for such an investigation apparent in the case of plant and factory waste.

The present demand for Federal legislation comes from, and is mainly supported by, the residents of beach resorts and shore communities who have suffered severe property losses and other damages from pollution ascribed to the discharge of oil and oil waste. The owners of water front property in the harbors and the municipal authorities of the ports also are exercised and voice apprehension of increasing fire hazard from oil floating on the surface and impregnating piers and abutments.

These complainants are unanimous in laying the blame for their present ills upon the action of oil and oil waste discharged into the water. They utter no complaint against factory waste.

Such reference as is made to factory waste comes from representatives of the fisheries interests. While affirming that the decline of their industry is chiefly caused by oil pollution they include also factory waste as a contributing cause.

An examination of the statements made and the reports offered at the hearing on October 25, last, however, will reveal nothing in the nature of scientifically supported facts regarding the effects of factory waste discharge into the waters. All that is alleged against such form of waste is mere speculation, and admittedly is based upon superficial observation. As opposed to that class of testimony you have in the record the conclusions of Dr. Herman M. Biggs, State commissioner of health of New York, in which he expressly states that the pollution of New York Harbor, against which complaint was made, is attributable to causes other than waste escaping from industrial plants.

Dr. Biggs was directed by Gov. Alfred E. Smith to conduct an investigation of the pollution of the waters of New York Bay and Jamaica Bay and their tributaries by the discharge of waste from manufacturing plants engaged in the manufacture or production of coal-tar or aniline by-products or wastes, including gas houses. His report, dated August 30, 1919, refers to investigations made by commissions during the past 20 years, and follows with this significant conclusion:

"Although the investigations of these commissions were directed primarily to the general pollution of these harbor waters by both sewage and manufacturing wastes, it is significant to note, particularly in the light of the conclusions reached in this report, that in none of the reports of these investigations, covering some 20 years, was any special mention of the specific pollution referred to by the complainant, namely, oils and aniline-dye wastes from the class of manufacturing plants in question. In fact, if the conditions complained of now had existed during the many years of investigation of the New York Metropolitan Sewage Commission which made its final report in 1914, and during which period many if not all of the plants now complained of were in operation, it would have been very surprising had that commission not observed them or made reference to them in its reports. The inference to be drawn from the absence of any such reference would naturally be, therefore, that the specific pollution from these oil and dye wastes, now complained of, was of little importance or significance prior to 1914, or that such pollution has originated since 1914 and is attributable to some other source than the manufacturing plants in question."

And referring specifically to investigation of aniline dye works the report reads:

"In some cases these wastes are passed through settling tanks or disposed of in cesspools, but in most cases they are disposed of without treatment. In the former cases there is no appreciable pollution and in the latter cases the color rapidly diminishes as they mix with the waters into which they are discharged and become dispersed and diluted."

Furthermore, Dr. H. F. Moore, Deputy Commissioner Bureau of Fisheries, stated that data upon the subject were very incomplete. In response to a question at the hearing on October 25 Dr. Moore said:

"Our investigations on this subject (pollution of waters), are not very complete. We have never had the facilities for carrying on work of this kind. We have rather exact data in regard to certain pollutions, but the number of which we have such data is exceedingly small when you compare it with the number of pollutions which are now being discharged into our streams. It really is a very complex matter, and one that will require years of investigation to complete, even with a considerable force, because you would have to consider not only the intrinsic toxicity of the material which is discharged, but the reactions of that material to the materials which are already in the water. It is a rather technical matter."

The decline of the fishing industry can not be accounted for by any off-hand complaint against discharge of industrial wastes. The fishing catch varies from year to year and in different sections of the world from causes far remote from pollution of the waters. Within the last few days newspaper dispatches report failures in the Mediterranean and off the Newfoundland Banks.

A dispatch from Paris dated November 5 says that scientists of the French Academy have studied reports from the Mediterranean and Atlantic coasts and have decided that the oyster shortage is due to a peculiar malady attributed to the unseasonable weather. Instead of the normal relationship between the temperature of the sea and the atmosphere, the oyster beds this year when uncovered often were found to be 20 degrees warmer than when they were under high tide. This constant changing has resulted in a tremendous decline in the season's yield.

A press dispatch of October 29 from Montreal reports:

"Fishermen and their families along the barren Labrador coast between Shecatika and Bradore are in danger of starvation on account of the failure of the season's codfish catch. A telegraphic appeal was received to-day by the minister of the interior of Quebec asking that a supply of flour be sent immediately to the famine-threatened districts. The telegram said many of the poorer people were nearly destitute and without any visible supply of food."

The unfortunate plight of the Labrador fishermen can not be ascribed to the discharge of any manufacturing wastes into the waters of the North Atlantic.

The failure of the season's catch is probably due to climatic, atmospheric, or other physical condition unfavorable to the industry this year.

Coming closer to home we find that careful observers fix the cause for reduced yield of shell fish in the Potomac and Chesapeake waters to the unrestricted operations of the fishermen themselves. The Washington Times of October 29 reports that Virginia and Maryland will join in legislation the coming year to protect the oyster and crab from extinction. The report reads:

"The crab fishermen and oystermen of Chesapeake Bay, the Potomac River, and Virginia waters have been so wasteful that crabs are getting to be almost a rarity compared with former days, when the salt waters below Washington swarmed with them. Added to this continuously wanton destruction of one of the world's greatest epicurean delights, the terrific freeze of three winters ago killed crabs by the millions. Never before was the Potomac frozen so far south, and after the ice had thawed dead crabs in countless numbers covered the shores and waters.

"The proposed legislation, agreed upon by the heads of the fisheries bureaus of the two States, will attempt to protect the 'sponge' bearing crab, the mother crab; limit the sizes of crabs that may be taken; prohibit dredging for them except between certain dates; and limit the taking of them by 'trot' lines to certain seasons. Even with drastic legislation it is going to be difficult to replenish the crab supply in Chesapeake and Potomac waters. Amateur and other fishermen kill crabs by the thousands during the summer months, throwing them into boats and letting them remain until they die. Oystermen, while dredging for oysters, drag them from the mud in winter in large numbers and never think of returning them to the waters."

Here we have it on the authority of one scientist that factory waste has no appreciable effect upon the pollution complained of in New York harbor. Another scientist informs your committee that the Federal Government's information on the subject of pollution is "exceedingly small." The experiences of fishermen reported from widely separated quarters of the globe, including those at our doors, emphasize causes other than factory waste in explanation of the decline of their industry.

Thus the conclusions of scientists and the experience of laymen all point to the necessity for a scientific investigation to ascertain the extent and causes of pollution before restrictive legislation is undertaken.

As Dr. Moore has well said, the discharges of industrial waste are of many kinds and of varying composition. Undoubtedly some waste produces no injurious effects in the waters, and yet a statute, general in character, might have the effect of prohibiting escape of such substances. The degree to which waste may change the character of the stream will also vary with different conditions in the various sections of the country, and even with varying conditions on the same stream. We have in mind the case of one large chemical plant, the effluent from which is of alkaline composition. Tests of the water at and below the point of discharge when compared with tests of the water above showed a less degree of alkalinity below than above. It is a matter of scientific determination, therefore, to fix the degree to which the alkalinity of the river was affected by the discharge of the alkaline substance.

Any consideration of the question of factory waste must take into account local conditions. A manufacturing plant may be the sole or principal support of a community, but would Congress be justified in closing its doors because its effluent made an angler's holiday afternoon less thrilling?

That question was put to the Supreme Court of Pennsylvania and the court decided that operation of the coal mines contributed more to the general welfare than did fish life in the rivers affected.

Whenever the problem arises in the interior the community in which the factory is situated may be depended upon to work out a solution much more satisfactorily than could Congress, and Congress would do well to leave to the city councils and the State legislatures the framing of ordinances and statutes to control in the particular cases needing attention.

Indeed, it is a serious question whether Congress has the power to include the streams of the interior in any legislation upon this subject. The Supreme Court has determined time and again that the Federal Government has no ownership of, or jurisdiction over, nonnavigable streams of a State, and that it has only a negative power as to the navigable rivers, which may be exercised only to prevent obstruction to navigation.

That doctrine is explicitly affirmed in the case of Kansas *v.* Colorado (206 U. S., 46) in which the court held:

"That the Government of the United States is one of enumerated powers; that it has no inherent powers of sovereignty; that the enumeration of the powers granted is to be found in the Constitution of the United States, and in that alone; that all powers not granted are reserved to the people. While Congress has general legislative jurisdiction over the Territories, and may control the flow of waters in their streams, it has no power to control a like flow within the limits of a State, except to preserve or improve the navigability of the stream; that the full control over those waters is vested in the State."

The rule announced in that decision restricts Congress from legislating at all in regard to nonnavigable streams and as to navigable streams you may exercise only a negative power to prevent obstruction to navigation. We contend and can show that the discharge of effluents from chemical plants does not impede or obstruct navigation.

But if Congress, nevertheless, enacts a law to prohibit plants located on navigable rivers discharging their effluents into the waters, while it is powerless to enforce similar prohibition as to factories on nonnavigable streams, there will result unequal conditions among competitors in the respective industries.

The practical aspects of the question, therefore, as well as the provision of the Constitution and the rule of law should convince Congress that the safest and wisest course is to leave to the city councils and the State legislatures the solution of this industrial problem, at least to the extent that it exists in the interior.

And, as stated above, information concerning the relation of factory waste to the pollution of harbor waters is so meager and uncertain that the wiser plan would be for Congress to direct an investigation to be made of that phase of the problem before drafting a measure to deal with it.

Very truly,

MANUFACTURING CHEMISTS' ASSOCIATION OF THE UNITED STATES,
By JOHN I. TIERNEY, *Secretary.*

STATEMENT OF MR. J. H. HAYS, NEW YORK CITY, REPRESENTING THE AMERICAN PETROLEUM INSTITUTE.

Mr. HAYS. Mr. Chairman, it has been very amusing to me sitting here for the last couple days watching the various industries getting out from under here and landing on the poor oil industry. The position of the oil industry, Mr. Chairman and members of the committee, is that we feel there is sufficient legislation at the present time to handle the situation. I want to be brief, because we have spoken before.

We quite agree with you that the depositing of oil in the harbors of the country, either crude or fuel oil, is an injurious matter. However, the discharge of oil is either intentional or unintentional. We feel that in the case of an unintentional discharge of oil there should be no penalty imposed upon the master of the ship or the owner of the ship. The oil industry has grown to such a large extent during the past years, and it looks to me as if it was going to continue to grow to such an extent that the different governmental agencies of the country and of the world will have to meet this situation. So far as the discharge of oil in the harbors is concerned, they have got to meet it in a way that is going to be the least harmful to industry and to commerce. A number of plans have been suggested as to how it should be met.

The CHAIRMAN. And it is as to those plans, Mr. Hays, we would especially like to hear you, because, I will say to you frankly, that it seems to be the sentiment of the committee at the present time, unless we learn something to change our views, that there is something at fault about the law as to its enforcement, so far as oil is concerned, and that that fault should be remedied speedily. Now, that seems to be the sentiment of the committee, and I will say to you frankly that we would like to hear you with reference to what you can propose in a practical way. We do not want to be harsh and we do not want to do anything that is not the proper thing to do, but the committee seems to be of the opinion now that the oil problem is one that has to be dealt with.

Mr. HAYS. There is no question about that, Mr. Chairman. They are dealing with it in foreign countries. The same thing that you are doing here to-day is being done in England and in other countries on the other side, and they are wrestling with this problem just the same as you are, because they realize that, so far as oil is concerned, it is staring us all in the face, and is going to grow greater as we grow in the service, and, naturally, we have got to evolve some sort of scheme that is going to be beneficial to both parties.

The American Petroleum Institute and the oil industry are not opposing any legislation at all. We do not think that there is any further necessity for more law. We kind of take the position which was assumed by Mr. Hulbert the other day, that agencies should be found to assist in taking care of this waste and protecting the harbors. We want help, if we can get it. At the present time all that I have heard discussed here is to make the law as drastic as possible so far as the oil industries are concerned. I have heard no talk as to certain instances where there is an unintentional violation of an act where there should be an exception made.

The CHAIRMAN. Mr. Bond, perhaps, can call your attention to something that is charged as appearing to be unintentional when it is intentional. The committee does not know about the facts. Mr. Bond, suppose you tell him very frankly about that matter.

Mr. BOND. It is reported that in the New York Harbor there are certain places where they get the oil, take it out in a cleaning process, and put it in barges, and then the barges instead of being taken out into the deep ocean and emptied, which would cost some seven or eight hundred dollars per trip, meet with a convenient accident in the harbor which promptly empties the barge, and then a wrecking crew is brought in to bring the barge up at a cost of $50.

Mr. HAYS. I do not know of any wrecking crew that could turn around and bring a barge up from the bottom of the New York Harbor for the sum of $50, Mr. Bond. I will be frank with you, I do not. I do not know who you are referring to, but I know you are not referring to any oil company.

Mr. BOND. I am not referring to an oil company.

Mr. HAYS. Or to any member of the American Petroleum Institute, because we do not do that kind of business, and it is not necessary to do that.

Mr. Dempsey spoke yesterday, or rather I got the idea from Mr. Dempsey, that so far as the discharge of bilge water was concerned it was primarily up to the tankers. That is not so, Mr. Dempsey. I do not think you will find that is the condition at all, because the tankers in coming in generally go up and connect with the pipes leading into the refineries, and where water has been pumped into the tank and the oil has become mixed with the water, by coupling up to the shore terminals that is pumped through into the refineries and is separated. So that the tankers are not opening up their big bilges or their big tanks and dumping water into the New York Harbor.

Mr. BOND. But is not this true——

Mr. HAYS (continuing). The only vessel that I think could do that sort of thing would be the cargo vessel. So far as the cargo vessel is concerned, as Mr. Gibbs said here some time ago, it has to do something in order to permit itself to navigate and continue on its way. Now, if that is an evil, then some means should be provided whereby that cargo-carrying vessel could dispose of its bilge water without staring up against the penalty of being fined every time it does so.

Now, the only methods I know of at the present time that strike me as practicable, are, first, the method which was advocated yesterday in a very rough way by Mr. Earle from Maryland. His plan, I think, possibly will do for the port of Baltimore. He says it will take about two hours for a vessel to go up to the dock and discharge and go on its way, and I inquired as to how many vessels went into the port of Baltimore during the 24 hours, and he said about five. Now, that condition does not exist in the harbor of New York. More vessels than five go in there in 24 hours, so that some other method will have to be provided, and to my mind it has got to be one of two methods: Either especially constructed barges, and there are a number of tankers and barges over there at the present time in New York owned by some oil companies which can be easily converted into the kind of barge necessary for this work.

This barge can go out and meet the cargo vessel coming in or the tanker and take on board this bilge water from out of its bilges or out of its tanks, and then take it into a terminal and run it through the refinery's pipes. Mr. Neuberger, the representative of the Standard Oil Co., said that if they would bring the stuff to their refineries they would be very glad to take it and separate it.

Mr. BOND. Is it not true that these tankers coming in empty quite often receive a radio to the effect that they are going to fill that tanker with a different type of oil and for them to clean out the tanks. Under those conditions is there not always some 3 or 4 or 5 inches of residue in the bottom of the tanks?

Mr. HAYS. Yes.

Mr. BOND. And are not those tanks cleaned out within a few miles of the shore, and does not that material stay on top of the water and come back and be deposited on the beaches?

Mr. HAYS. Mr. Bond, that might be so, but, so far as our fleet is concerned, our captains have strict instructions that their tanks and everything are to be cleaned out at our refineries, and that can be done.

Mr. BOND. I have talked personally with captains who have had experience on such tankers.

Mr. HAYS. Captains will take a chance on anything.

Mr. BOND (continuing). And they tell me that that has been the custom. I do not say that that is the custom of your particular company but of some of the companies entering the New York Harbor.

Mr. HAYS. I would not deny that at all because sometimes captains do take chances.

Mr. BOND. The very fact that your company does not do that indicates that your company realizes that that is an evil, and therefore it should be stopped, should it not?

Mr. HAYS. Oh, yes; and we are trying to do everything we can to stop it, and we are trying to work along with the committee and get every helpful suggestion we can, but at the same time we do not like to be hit in the ear when there is an unintentional violation.

Mr. LAYTON. As far as the interests you are representing are concerned, I understand that you really have an adequate way of meeting this trouble.

Mr. HAYS. So far as our company is concerned, our tankers come in and connect up with the shore terminals and pump the water in the tanks through into the refineries and separate the oil from the water; yes, sir.

Mr. LAYTON. In other words, that is your system?

Mr. HAYS. Yes, sir.

Mr. LAYTON. And your system works?

Mr. HAYS. Some companies have the same system.

Mr. LAYTON. Your system works?

Mr. HAYS. Yes, sir.

Mr. LAYTON. That is all I wanted to ask.

Mr. HAYS. So far as cargo vessels are concerned, I do not see how they could do that.

Mr. BOND. There is no reason why other companies could not do that, is there?

Mr. HAYS. If they have the refineries there.

Mr. CHALMERS. Have you any personal knowledge, Mr. Hays, about the Texas Co.? They do quite a business in that port, I believe.

Mr. HAYS. No; I have not. I do not think they have a refinery in the harbor of New York. The Tidewater Co. has and we have.

The other method, outside of the barges, is a plan similar to the one adopted in the port of Amsterdam. Congressman Appleby has a photograph of that plan which is very good and is one which could be worked with very good results so far as New York Harbor is concerned. A plant of this kind could be put up along the Jersey shore where there is plenty of water and where vessels of all kinds coming in could get into this little harbor and go up and discharge their oil into the tanks very easily. This plan is so arranged that they have certain gates so that if in the discharge of the oil in this particular harbor a fire ensues, they can put down these gates very promptly and stop the spread of the fire to the North Sea. They are the three plans that at the present time I have any knowledge about.

The CHAIRMAN. Mr. Hays, if you will pardon me, I was diverted for a moment and did not hear your last statement. Would you very briefly tell me just what the three plans are?

Mr. HAYS. One is the plan which Mr. Earle brought out yesterday, which I do not think is applicable in New York unless you had quite a number of them. The second plan is by specially constructed barges to take on board the water, and the third plan is a plan similar to that adopted by the port authorities of Amsterdam. They have created a harbor where 6 or 8 or 10 vessels can go into the harbor and discharge this matter into tanks and then go out the other way and continue on their voyage, and if any fire takes place inside of the harbor they can let down gates which will stop the spread of the fire going out into the North Sea. This could very readily be done by the establishment of a station on the Jersey shore, or the New York shore either, at Sandy Hook.

Now, so far as any legislation is concerned, the oil industry recognizing that there is a law now and that they are being fined under that law, still think

some consideration should be given to the unintentional violations, and I suggest that in the consideration of any bill a clause similar to this should be considered by the committee, and I will give it to you in the record so that you can have it:

"*Provided*, That in the case of proceedings against the master, owner, or operator of a ship for an offense under this section, it shall be a good defense to prove that the escape of the oil was due to or that it was necessary to discharge the oil by reason of a collision or some damage or accident caused to the vessel; that in the case of escape all reasonable means were taken by the master to prevent the escape, and in the case of such proceedings against any other person, that all reasonable means were taken to prevent the escape, or that it was necessary to discharge the oil by reason of some emergency."

I feel also that there should be no minimum fine attached to the penalty. It should be a fine of not exceeding $1,500 or $2,500, or a jail sentence, in the discretion of the court, because in some cases where proof is brought before the court at the present time, the court sees that it was an absolutely unavoidable accident, but a fine must be imposed under the present act now in effect.

The CHAIRMAN. I suppose you would suggest in addition to the provision which you have quoted that in the case of a continuous offender the punishment should be much more drastic.

Mr. HAYS. Yes, sir; I am perfectly willing to help along in any way.

The CHAIRMAN. Now, may we ask you about this illustration which you have submitted here?

Mr. HAYS. I will be frank with you, Mr. Chairman; I got that from Mr. Appleby. I had heard of this proposition abroad, and Mr. Appleby fortunately had the magazine, and here is what the article says:

"Amsterdam Petroleum Harbor: This harbor or dock is provided with two floating iron beams with which the dock can be closed in case of fire, so that burning oil is prevented from drifting into the North Sea Canal. The area of the dock is 70 acres, while the grounds surrounding it, of an extent of 30 acres, have been fitted out with petroleum tanks, pumping station, sheds, barrel-filling shops, spaces for storage of barrels, railroad sidings, and everything else required for carrying on the concern, which is done by the corporation. On the island in the center of the horseshoe-shaped dock there is storage space for naphtha and benzine. Besides the tanks, with a capacity of 155,000 barrels which the corporation leases, any firm may also lay down their own plant on the grounds, as the American Petroleum Co., Petroleum Trading Co., and the Creosote Export Co. have already done and several other concerns which will probably shortly do, because they wish to store and manipulate benzine in the precincts of the port of Amsterdam, as, being centrally situated, it seems to be most convenient for the purpose. The petroleum dock is lighted by electricity, so this electric current for power and heating of oils is also available. Proving insufficient and should be extended."

Now, it would appear that this is a central petroleum harbor to give opportunity efficiently for all companies to combine and transact their business at one particular point so as to relieve a possible fire hazard, but the same idea can be carried on so far as the disposal of the refuse or waste matter coming from the ships is concerned. A harbor could be constructed and a pumping plant could be installed there and it could be disposed of in a similar way.

Mr. LAYTON. Does that article show or have you any information as to what the value of the recovery would be per annum?

Mr. HAYS. I will have to refer you to Congressman Appleby for that information, Dr. Layton; I do not know. He got this up. We got to discussing it and I thought it was a very good idea.

When I speak of unintentional violations, naturally you would like to hear of some concrete examples which would bring to your minds the thought that in the case of unintentional violations some relief should be given. Mr. Appleby having introduced this bill, from a joking standpoint, I guess he thinks we kind of walked up to his front yard and dumped three or four thousand barrels of crude oil on it in order to let him understand that there could be an unintentional violation. Last week our steamship *Caddo* was steaming up from Talara, Peru, to Bayonne, with a cargo of Peruvian crude on board, and the captain got off Barnegat Light. Barnegat Light shows about 19 miles out at sea.

This captain evidently did not recognize the light, and he thought he would run in a little bit closer to see if he could identify it, so he laid his course in

closer and nearly ran down a submarine whistling buoy. He said that when he realized it was the Barnegat Light he then ordered his rudder put over and the ship failed to obey the rudder, and he then found he was aground. That was his explanation to us. We then sent down the American Chapman Salvage and Wrecking Crew, and naturally the thing has gotten into the newspapers, and the Philadelphia Ledger of December 5, 1921, contained this article, which was sent to Congressman Appleby, and he asked me to call it to your attention:

"OIL FREES TANKER ON SHOALS.

"ATLANTIC CITY, December 4.—Coast guards reported to-day the British tank steamer *Caddo*"—

Which is not a British tank steamship—

"which went aground off Barnegat in a fog Friday night, had succeeded in getting off the shoals and resumed her voyage from Talara, Peru, to New York. More than 4,000 barrels of a cargo of 15,000 barrels of crude oil were discharged in the ocean, enabling tugs to free the vessel. The tanker was not materially damaged."

I then asked that a report be given to me from the American Chapman Wrecking Co., and their report is this:

NEW YORK, *December 5, 1921.*

Mr. ROBERT L. HAGUE,
Manager Marine Department Standard Oil Co. of New Jersey,
26 Broadway, City.

DEAR SIR: Following our interview of this morning, regarding steamship *Caddo*, wish to say that we have interviewed by telephone our salvage officer, who had charge of the operations on this vessel.

From him we learn the following facts:

The vessel was stranded at the mouth of Barnegat Inlet, a short distance south of the light.

Upon arrival of our expedition at 6.10 a. m. Saturday morning, December 3, our salvage officer was informed that about 600 tons of cargo of oil had been discharged overboard. He estimates that after our arrival there was about 1,500 tons jettisoned, but this was not commenced until 4 p. m. on Saturday, December 3.

There was a northwest wind, but a heavy easterly swell setting in, causing rough sea; and the location of the vessel, being in the mouth of the inlet, a very strong current was setting in from the eastward, operating to cut the sand out from under both ends of the vessel, which would probably have broken the vessel in two, same as happened in the case of the U. S. Army transport *Sumner*, stranded at the same place a few years ago.

Had it not been for these conditions, the cargo would not have been jettisoned at that time, and there was no time during Saturday that it was possible for a barge to have been put alongside to take cargo, for the reason that the sea was too rough.

The final action of jettisoning cargo was made necessary by the conditions existing and the serious danger of damage or loss of the vessel.

Our salvage officer further stated that the oil was of very light grade hardly noticeable on the surface of the water and most of it was blown out to sea by the northwest wind prevailing at that time.

Very truly, yours,

MERRITT & CHAPMAN DERRICK & WRECKING CO.,
By C. W. WOOLSEY, *Assistant Treasurer.*

Upon the report of the captain to our office that he was aground, we told him to not take any action about discharging until lighters had gotten down there and had seen what we could do, but he had already discharged 500 tons when he got our telegram.

So you see, in some instances, there may be a necessity requiring, in order to save property and sometimes life, the jettison of part of a cargo. It seems to me in this particular case there should not be a penalty imposed upon the person so doing. If there is an intentional violation of any statute there should be a fine imposed, there should be a stiff fine imposed, but where violations occur in the manner in which I have stated here this morning I feel relief should be given.

Mr. LAYTON. Do you believe that the court would hold that as a violation of the statute?

Mr. HAYS. Yes, sir.

Mr. CLOUSE. Do you not think a man who operates his automobile on the streets with a total d'sregard of the people——

Mr. HAYS (interposing). He ought to be soaked.

Mr. CLOUSE. Do you not think that if this penalty attached in every instance it would be an incentive to make them more careful?

Mr. HAYS. No, sir. I do not think any legislation, hit or miss, is the proper kind of legislation. I do not think that you ought to take nine citizens who unintentionally or through a technicality violate the law and hale them before the court in order to get the one man who intentionally starts out to do that particular thing.

Mr. CLOUSE. Is it your suggestion that the burden of proof shall be upon the master of the ship or the shipowner?

Mr. HAYS. Yes. You are not fooling the court. One man out of 10 or 15 may fool the judge.

Mr. CLOUSE. Once in a while?

Mr. HAYS. Once in a while you can get through. Anyone will permit themselves to be buncoed once, but when they come up the second time they have their ears, eyes, and everything opened. That is the way with the courts.

The CHAIRMAN. But that would not be a question for the court, it would be a question for the jury.

Mr. HAYS. No; there are no jury trials in these cases.

The CHAIRMAN. On the penalties?

Mr. HAYS. Yes, sir. There has not been any brought against us. We have investigated the facts very carefully. Sometimes the matter has been brought under one law where the minimum fine is $500, and upon being shown to the district attorney, who also investigated into the conditions and surroundings of the case, is satisfied from his own investigation that there was no intentional violation of the act but that there was a technical violation of the act, through an unavoidable accident; he will then likely change the statute under which you are fined to the statute where the minimum fine is $250, and you go in and pay the fine because there is no chance to get away from it. Before your committee here a year or so ago the representative of the engineers said that the purpose of this act, so far as penalizing anyone was concerned, was that a criminal intent must be shown before any penalty could be imposed.

So I took a concrete case that we had up to the judge of the court and over to the district attorney, and also the statement from Col. Taylor, I think it was, in a letter to Senator Jones, and I said, "Here are all the facts in the case, here is the statement of the War Department's representative before the senatorial committee, and I will leave them with you." The district attorney and judge said, "While wo do not like to challenge any statement made, a penalty must be imposed," and the penalty was imposed. I think as far as the War Department is concerned, you are entirely wrong about the prosecution having to show criminal intent. You do not have to show any intent.

Mr. CHALMERS. What was the value of the 500 tons of oil last week?

Mr. HAYS. Between $20,000 and $25,000.

Mr. CHALMERS. In your judgment, that would be large enough to keep the captain from taking any chances?

Mr. HAYS. Yes, sir. There was $20,000 or $25,000 that went right overboard, but we had to do that in order to free that vessel from the beach or else she would have broken in two.

Mr. LAYTON. The Standard Oil people are not in the habit of throwing money away?

Mr. HAYS. I do not think that is their custom; they are very careful business men and did, I think, everything they could.

The matter was originally brought where a steamer of the Mexican Petroleum Co., the *Frederick R. Kellogg*, came into Ambrose Channel during the war. A submarine had deposited some bombs there. The *Kellogg* struck one of the bombs and was put into shore as quickly as possible. In three minutes she sank. Immediately the crude oil appeared all along the shores of New Jersey. That was the first complaint that we got about crude oil. It has just been mounting up ever since. We recognize that there is an evil in the discharge of oil, but we feel there should be a distinction, so far as penalizing is concerned, between the intentional violation and the unintentional violation.

The CHAIRMAN. We are much obliged to you, Mr. Hays.

STATEMENT OF HON. T. FRANK APPLEBY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW JERSEY.

Mr. APPLEBY. Mr. Chairman and gentlemen of the committee, it seems to me that the last witness has proven the case, so far as the oil pollution is concerned. You will also probably recall that at the previous hearing on my bill, H. R. 7369, on October 25, certain representatives of steamboat companies admitted that they had dumped their bilge water into the harbor and ocean and made the plea of economy as an excuse for the act.

The drawing which you have there, which Mr. Hays so kindly presented, together with this blue print showing how this matter is operated, I should like to have filed and become a part of the record. It seems to be a most practical solution of the pollution problem.

I should like also to put into the record, Mr. Chairman, the joint resolution No. 216 which I introduced, calling for an international conference upon this subject. The problem is not only national, but it is international, and practically every nation in the world, wherever there is a port or harbor doing any considerable importing or exporting, is having the same trouble that we are, and I should like to have that made a part of the record.

(The joint resolution referred to by Mr. Appleby follows.)

[H. J. Res. 216, Sixty-seventh Congress, first session.]

JOINT RESOLUTION Authorizing and requesting the President of the United States to call a conference of the leading nations controlling and operating ocean shipping to consider the advisability of amending our international maritime laws, to the end that control may be had over the constantly increasing pollution of the navigable waters of the world by oil-burning and oil-carrying steamers through the dumping into said waters of oil waste, fuel oil, oil sludge, oil slop, tar residue, and water ballast.

Whereas the careless casting of oil refuse into the sea from oil-burning and oil-carrying steamers has become a serious menace to the maritime and fishing industries of the United States and other countries; and

Whereas the fire hazard created by the accumulation of floating oil on the piles of piers and bulkheads in the various harbors of the world is a growing source of alarm; and

Whereas most serious is the destruction of ocean fisheries resulting from the constant discharge into the various coast waters of the waste products of the oil used for fuel on many steamers in place of coal, which threatens to exterminate the food fish, oysters, clams, crabs, and lobsters, which are a vital part of our various national food supplies; and

Whereas the dumping of this oil refuse is not only ruining the bathing beaches situate on the coast waters of the various countries, which during the summer attract hundreds of thousands of people to the seashore resorts, but the depreciation in value of millions of dollars of seashore property is most alarming; and

Whereas it has been established that this pollution extends for many miles out to sea and beyond the jurisdiction of the 3-mile limit: Now, therefore, be it

Resolved by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is authorized and requested to call a conference of the leading nations controlling and operating ocean shipping to consider ways and means to control this constantly increasing pollution of the navigable waters of the world by proper amendments to our international maritime laws.

Mr. APPLEBY. To my mind there is no doubt about the pollution by oil of the rivers and harbors. It is a menace that can be dealt with and the solution of it is practical. As to the tributary branches and streams, that part we are perfectly willing to eliminate from the bill. I now desire to offer certain amendments to my bill, H. R. 7369, being practically a substitute for the same, which I will put into the record.

(The amendment referred to by Mr. Appleby follows:)

A BILL For the further regulation of commerce by protecting navigation, commerce, and fishing in the navigable waters of the United States against pollution of said waters by oils or oil refuse, authorizing the Secretary of Commerce to make such rules and regulations to carry out the purposes set forth in the act and for the effective policing thereof, providing a penalty for the violation of said act or such rules and regulations, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful to empty, dis-

charge, throw, or deposit, or to attempt so to do, or to suffer or permit the same, or to suffer or permit the flow or run of oil, fuel oil, oil sludge, or oil refuse in any form into any navigable waters of the United States or into a nonnavigable water or waters connecting with or flowing into a navigable water that obstructs, impedes, or interferes with navigation, or that injures, endangers, or is detrimental to, or that may be injurious, detrimental, or dangerous to navigation, commerce among the States, with foreign nations, or to fish or fishing in said navigable waters, or that destroys or may be destructive or injurious to fish eggs, larvae, or fish food, or that destroys or injures, or that may be injurious, detrimental, or destructive to adult fish, including shell fish, or that destroys or injures the spawning or feeding grounds of fish, or that prevents, or may tend to prevent, fish reaching feeding or spawning grounds, or that injures or may be injurious or detrimental to, or that is dangerous or that may endanger the lives and the property of those engaged in navigation, commerce, or fishing in said navigable waters of the United States.

2. That the Secretary of Commerce is hereby authorized and empowered to make such rules and regulations and establish such service in connection therewith as will insure the objects and purposes of and to give effect to the provisions of section 1 of this act, which rules and regulations shall provide for the manner of handling and disposition of such oil, fuel oil, oil sludge, and oil refuse in a manner that will prevent the mischief against which this act is directed.

3. Any person who violates the provisions of section 1 of this act or the rules and regulations established by the Secretary of Commerce in accordance with section 2 of this act shall be guilty of a misdemeanor; and on conviction thereof, shall be punished by a fine of $2,500 or by imprisonment for not more than one year nor less than thirty days, or both such fine and imprisonment, in the discretion of the court.

4. The Secretary of Commerce is hereby authorized and directed to make such investigation as may be necessary to determine what, if any, substances or refuse matter other than oils and the refuse thereof is, or may be, so emptied, thrown, discharged, or deposited in the waters of the United States as to cause mischief the same as or similar to that against which section 1 of this act is directed, and to report to Congress the results of such investigation in such detail and with such recommendations as may aid Congress in the consideration of the advisability of further legislation to protect navigation, the commerce, or the fisheries against such mischief.

Mr. APPLEBY. One of the most important features of this amendment is the matter of administration, which is placed in the hands of the Department of Commerce rather than the War Department. During the past three or four years a number of flagrant cases of dumping refuse oil in navigable waters have been brought to the attention of the War Department; but the Corps of Engineers, mainly through lack of necessary equipment, has been unable to deal with the matter in a satisfactory manner. For this reason it has been thought best to transfer the administration of the law to the Department of Commerce. This department of the Government having certain jurisdiction over our navigable waters through its various bureaus, such as Fisheries, Lighthouses, Navigation, and Steamboat-Inspection Service, and being equipped with boats and other paraphernalia to identify and apprehend the offenders, will, in my judgment, secure much better results than the War Department. I had a conference two or three weeks ago with Senator Frelinghuysen, Secretary Hoover, and Judge Lamb, of the Department of Commerce, when the matter was discussed very thoroughly. They are very much interested; and what we want is some department of the Government which is really interested in taking care of this very serious evil. That is about all I have to say. I would like to file this cut of the petroleum harbor at the port of Amsterdam, the Netherlands, together with the blue print[1] and description of the same, with the committee, and would ask that they be incorporated in the hearings when printed.

That is about all I have to say. We will file these papers with the committee.

The CHAIRMAN. We thank you very much.

[1] Not printed.

(The papers submitted by Mr. Appleby follow:)

"PETROLEUM HARBOR, AMSTERDAM.

"This harbor or dock is provided with two floating iron beams, with which the dock can be closed in case of fire, so that burning oil is prevented from drifting into the North Sea Canal. The area of the dock is 70 acres, while the grounds surrounding it, of an extent of 30 acres, have been fitted out with petroleum tanks, pumping station, sheds, barrel-filling shops, spaces for storage of barrels, railroad sidings, and everything else required for carrying on the concern, which is done by the corporation. On the island, in the center of the horseshoe shaped dock, there is storage space for naphtha and benzine. Besides the tanks, with a capacity of 155,000 barrels, which the corporation leases, any firm may also lay down their own plant on the grounds—as the American Petroleum Co., Petroleum Trading Co., and the Creosote Export Co. have already done and several other concerns will probably shortly do—because they wish to store and manipulate benzine in the precincts of the port of Amsterdam, as, being centrally situated, it seems to be most convenient for the purpose. The petroleum dock is lighted by electricity, so this electric current for power and heating of oils is also available. Proving insufficient and should be extended."

STATEMENT OF HON. S. O. BLAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF VIRGINIA.

Mr. BLAND. Mr. Chairman and gentlemen of the committee, the district that I represent would be largely affected by this legislation. That will be realized from a recollection of the fact that my district extends from the boundaries between Virginia and Maryland to Norfolk, taking in both sides of the Chesapeake Bay, the tributaries into the Chesapeake, and also the Atlantic coast from the Virginia line to the capes. I may add that the State of Virginia below those lines is also peculiarly affected. I have had correspondence with various parties who advise me—and I know their statements to be true—that the situation is serious with us, just as serious as in the sections to which testimony has been particularly directed. We have had no ships exploded by mine, but we have had quantities of oil on the water. One gentleman who lives on the shore of Hampton Roads writes me that the oysters are affected by the oil; that the oil can be clearly detected in them. He tells me also that after taking baths in the waters of Hampton Roads it has been necessary to use gasoline for his family to cleanse themselves of the oil. I understand from some larger oyster planters that the oyster beds in Hampton Roads are threatened with destruction. Just up the river from Newport News the seed-oyster beds, which are the most valuable in Virginia and also in the United States, are threatened with destruction.

Of course, in this matter you have to take into consideration the relation of the legislation to commerce as well as to the fisheries. In other words, we do not care to impose any unreasonable burden upon the ships. Entire relief may not be possible except through international understanding, and there would be some prospect of complete solution through an international conference. But something should be done to protect our waters now, rather than await the slower processes of international conferences.

Secretary Hoover said yesterday that districts might be provided, and it was particularly with reference to his suggestion that I wished to speak. If district legislation is to be granted, that is, if you divide the country into districts and provide protection in certain localities, we want to be one of the districts to be protected.

Mr. LAYTON. I agree with you.

Mr. BLAND. I thank you very much.

I may add that I am told by one of my constituents that he tried to establish a terrapin farm in one of the coves flowing into Hampton Roads, and that twice those waters were overflowed with oil so that he had to abandon the enterprise. For your information and in order that your subcommittee may carry out an investigation in that direction if it so desires, I may say I have been told that the authorities of the Newport News Shipbuilding & Drydock Co. have arranged some plan whereby they take care of the refuse oil on the vessels brought there. I am not in a position to go into detail, but I have been told that it has been worked out so that it takes care of the situation properly and profitably.

PETROLEUM HARBOR—THE PORT OF AMSTERDAM. THE NETHERLANDS.

Bird's-eye view on western portworks from west.

Mr. LAYTON. Could you get that information for the committee?

Mr. BLAND. I shall be glad to do so. I will communicate with Mr. Ferguson, the president of the yard, and try to get that information.

We have valuable bathing beaches along our shores, namely, Buckroe Beach, on the Chesapeake Bay, not far from Newport News; Virginia Beach, not far from Norfolk; and the beach at Ocean View. Considerable sums have been spent on these resorts. They are so menaced by oil that their existence as bathing resorts is in danger.

I have been told by a constituent on the Rappahannock River that he has seen ducks very much affected. I do not recall now distinctly whether it was said that they could not fly or whether they were dead from the oil that was upon the water. I know that I have seen similar statements in the magazines, and I was surprised to hear the statements confirmed by an eyewitness in my own district.

There is one other phase that I think the committee should take into consideration and that is the thought expressed by the gentleman from Colorado. I am delighted to know that Virginia, Delaware, and Colorado stand together on the State rights question. I want to protect our fisheries, but I seriously doubt the existence of any power in the Federal Government to grant protection, except through the power of the Federal Government to control the instrumentalities of navigation. The Federal Government has control over the oil situation, because the trouble comes principally from the instrumentalities of navigation, and it has ample power over the instrumentalities of navigation.

It has also ample power to protect the instrumentalities of navigation from the oil which is deposited by a ship upon the water or which flows from the banks. Such oil constitutes a menace to navigation, its aids, agencies, and instrumentalities, and the power over navigation carries with it ample power to protect navigation, its instrumentalities, aids, and agencies from anything that interferes with, impedes, threatens, or menaces navigation, or its aids or instrumentalities.

Sewage pollution presents a different question, and I should like to call your attention in this connection to an opinion rendered by the Supreme Court of the United States in Darling *v.* Newport News (249 U. S., 541–63, L. Ed 759), in which that question was very carefully discussed. Whether it would throw any light upon the present question, I am not now prepared to say, but it is worthy of consideration.

Further, concerning the position that was taken by the gentleman from Colorado, I want to call your attention to this expression of Mr. Justice Brandeis in the case of the port of Seattle *v.* Oregon, decided January, 1921:

"The right of the United States in the navigable waters within the several States is limited to the control thereof for purposes of navigation. Subject to that right Washington became, upon its organization as a State, the owner of the navigable waters within its boundaries and of the land under the same." (See also Weber *v.* State Harbor Commissioners, 18 Wall., 57, 21 L. Ed 798.)

I can cite a number of authorities from the Supreme Court of the United States determining the right of the States as to the fisheries. I will just mention Manchester *v.* Mass. (139 U. S., 240), Smith *v.* Maryland (18 How., 71), McCraedy *v.* Virginia (94 U. S., 391), U. S. *v.* McCullough (221 Fed., 288), Geer *v.* Connecticut (161 U. S., 519), New York *v.* Hesterburg (211 U. S., 34), and The Abbey Dodge (223 U. S., 166).

I mention these cases, because in the framing of legislation I am satisfied that the committee will desire to have in mind these constitutional powers and limitations so that the beneficial legislation may not be endangered by the introduction of unconstitutional features and thus the benefit of the desirable legislation be lost.

I thank the committee for its attention.

The CHAIRMAN. We are very much obliged to you, Mr. Bland.

STATEMENT OF MR. W. C. HENDERSON, ASSISTANT CHIEF BUREAU OF BIOLOGICAL SURVEY.

Mr. HENDERSON. Mr. Chairman and gentlemen of the committee, I think I will not take over two minutes of your time. I merely want to indorse, on behalf of the Biological Survey, the expression of Mr. Hoover yesterday, but looking at the question from the interest of the wild birds of the country rather than the fish. The Biological Survey has to do with the wild life of the country. We have had

reports from various parts of the country, from both coasts as well as from some inland waters, of the destruction of thousands of wild ducks and geese and other wild birds by the pollution of the waters with oil and other harmful substances. We feel that if this should continue to grow worse from time to time as it has continued to grow during the past three or four years that it would constitute a very serious menace to the welfare of the wild birds of the country, particularly, perhaps, the wild ducks and geese in their flight up and down the coast. On behalf of the Biological Survey, I want to express our deep interest in the legislation along this line.

We are not here, however, to suggest the form of legislation, we have not made a study of the different bills, and we are willing to leave that to the committee to decide what form the legislation should take. I might say, however, that it is a little different from the case of fish. As to these wild birds, there is no question, I think, but that the Federal Government, under the treaty with England for the protection of migratory birds between this country and Canada, has the right to take suitable measures to protect these birds under the law passed for its inforcement.

I am much obliged to you.

The CHAIRMAN. We thank you very much, Mr. Henderson.

Mr. BOND. One of the gentlemen has mentioned the petroleum situation in Amsterdam. For the general information of the committee, I think it might be well to say that New York is already making some plans for development along the same general lines.

Mr. APPLEBY. Is it practical?

Mr. BOND. It seems to be in the interest of the city of New York.

STATEMENT OF HON. J. M. C. SMITH, A REPRESENTATIVE IN CONGRESS FROM THE THIRD CONGRESSIONAL DISTRICT OF MICHIGAN.

Mr. SMITH. Mr. Chairman and gentlemen of the committee, I understand that the bill has or will be amended so as to exclude the pollution of navigable waters and their tributaries, and that the hearings will be continued, or extended rather, until further investigation can be had in reference to depositing oil only.

I represent a district in which there are located and operated some of the largest paper manufacturing mills in the country, and, as it is sometime said, in the world. These mills represent an investment of many millions in capital; they employ thousands of employees, and manufacture about a quarter of a million of tons of white book paper annually. This bill is so far reaching in its original state that these mills would be practically destroyed if it were enacted into law, and I am appearing this morning to ask that if any investigation of the pollution of navigable waters and their tributaries is had or contemplated, that opportunity be given to the owners of these vast properties to be heard as to the effect and result of the purpose of the original bill.

No State excels Michigan in its health, climate, and conditions. Many of these mills have been operated for years without deleterious effect to health or property, and I am sure upon full hearing, they would be exempted from the provisions of the bill.

(Thereupon the committee adjourned.)

APPENDIXES.

BRIEF OF ENOCH S. FARSON AND SYDNEY G. FISHER, OF ESSINGTON, PA., AND LETTER OF THE DEPARTMENT OF FISHERIES, STATE OF PENNSYLVANIA.

ESSINGTON, DELAWARE COUNTY, PA.,
December 6, 1921.

CHAIRMAN OF THE RIVERS AND HARBORS COMMITTEE,
House of Representatives, Washington, D. C.

DEAR SIR: In response to your suggestion that those of us interested in bill H. R. 6379, making illegal the pollution of navigable rivers of the United States, should file a brief with you on behalf of the Delaware River interests we represent, I beg to say that Mr. Enoch S. Farsan, of Ridley Park, Delaware County, Pa., and myself were appointed a committee a couple of years ago

by a meeting of citizens in the town of Chester, on the river, to stir up public interest and do what we could to organize opposition to the frightful pollution of the Delaware which has been going on for some time.

We procured articles to be published on the subject in the newspapers, addressed several meetings of citizens interested in the subject, and did all we could to get the Pennsylvania State Department of Fisheries to act. The fisheries department responded nobly—put a very good inspector on the river, who, by going about and talking to the various oil plants that were polluting the river, did a great deal of good. The enormous amount of oil, tar, and sludge that had been blackening all the shores was very much lessened, but not entirely abolished. I mention this partial success to show that it is perfectly feasible to abolish the nuisance if governmental authority will go at it with any vigor and force. The State fisheries department could not entirely wipe out the nuisance, because they had not money enough to keep a force of inspectors continually watching the river and boarding oil ships down in the bay or at the entrance of the capes; also because one-half of the Delaware River is controlled by New Jersey and another part of it by the State of Delaware, and joint action of these authorities with Pennsylvania could not be secured; and also because the Pennsylvania statutes on the subject were not sufficiently drastic.

We believe, however, that the National Government, being able to deal with the subject independently of State lines, and having more money and power at its command, can completely wipe out the whole nuisance of river pollution and restore to the citizens of the United States the use of their rivers for food supply, health, and pleasure. As it is now, the Delaware River, from considerably above Philadelphia, all the way to the Capes, is nothing but a sewer for oil, oil tar, and sludge, which has destroyed nearly all the natural fish in the river—not only the shad but also the other varieties of fish which used to be a considerable food supply and source of pleasure. The oil and oil tar not only drives away fish but kills and exterminates the lower forms of life on which the fish feed. So strong a poison is the oil and oil tar that in numerous instances along the river it has been strong enough to destroy the splatter docks and other vegetation along the shores.

The beaches have been covered in many places with a coating of tar 2 or 3 inches thick. A person could not walk on the beach without having his shoes covered with tar and spending an hour afterwards with a bottle of turpentine to try to get it off. Sticks, wood, logs, oars, boats, cables, everything was covered with the tar, and river work of any kind and navigation of boats rendered disgusting. A cable was sometimes so covered with the tar that sailors could hardly haul on it because it slipped through their hands. And a rope, oar, or anything brought on board of a vessel covered everything with filthy tar. The pleasures of yachting, boat sailing, and canoeing in summer time were almost ruined and bathing rendered disgusting to everyone except pigs.

So far, therefore, as Mr. Farson and myself represent public sentiment on the Delaware River in this locality, we can say that we are most heartily in favor of the bill H. R. 6379 and hope you will be able to secure its passage by Congress and signature by the President.

Thanking you for the courtesy of your letter and your efforts and labor for the public good, we have the honor to remain,

Truly, yours,

ENOCH S. FARSON.
SYDNEY G. FISHER.

DEPARTMENT OF FISHERIES,
Harrisburg, Pa., December 3, 1921.

Mr. SYDNEY G. FISHER,
Essington, Pa.

DEAR SIR: Your communication under date of November 29 has been received at this office during the absence of Mr. Buller, who is at one of the hatcheries on official business.

We have read over the same very carefully and note what you say in reference to a bill having been introduced in Congress to stop the pollution of navigable rivers and that you have been in communication with the chairman of the Rivers and Harbors Committee, who requested that you file a brief with him,

which you intend to do; also note that you would like a letter from this department which you could send along. As Mr. Buller will not be back before the 7th of December I might say that there is no one more interested in freeing the streams of pollution than the department of fisheries, and under the laws we are doing everything within our power. If the Federal authorities can enact some legislation which would eliminate the pollution of oil and tar, which comes principally from the tankers entering the port of Philadelphia, a great step would have been taken toward the ultimate purification of the Delaware River at this point. In so far as Pennsylvania is concerned, as you know, we have been doing everything possible in this connection in the vicinity of Philadelphia, and while our laws are not all that they should be, nevertheless we have accomplished a great deal. It was only a few years ago that shad used to enter this river in great numbers during the spawning season, but during the past few years very few have been taken at our hatchery at Torresdale. This once great food supply has been practically ruined, and for no other reason than the pollution of the Delaware from Philadelphia to its mouth.

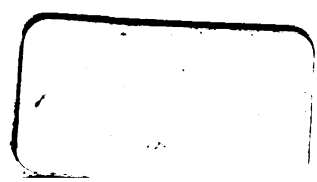
There are very few serious pollutions on the Delaware River from Philadelphia to its source, and we are working continually toward its purification at every point, but of course from Philadelphia to the bay it would need the cooperation of the States of New Jersey and Delaware and the Federal authorities.

We certainly are pleased that such a great interest is being shown along these lines, and, as we have stated before, the question of the pollution entering our lakes and streams is a stupendous question to solve and one which is not only important from the standpoint of the conservation of the fish in our waters, but also the health of the people. Upon Mr. Buller's return to the office your letter will have his attention, and he will no doubt advise further on this subject.

Trusting this information will assist you in preparing your brief, we beg to remain,

Very truly, yours,

H. R. STACKHOUSE, *Chief Clerk.*



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